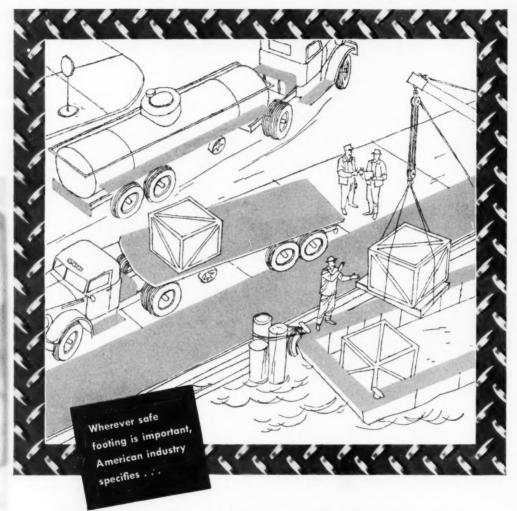
ND EQUIPMENT



Christmas 1952



INLAND 4. WAY SAFETY PLATE

Because ACCIDENTS are COSTLY, safe, sure footing pays off in higher production, better fire protection and lower insurance rates.

Men "on the move" appreciate the non-skid, slip-resistant qualities of Inland 4-Way Safety Plate. They work faster and more efficiently; morale is generally higher. The long-lasting qualities of Inland 4-Way Safety Plate means lower maintenance and replacement costs —fewer repairs.

You'll be wise to use Inland 4-Way Safety Plate on all danger spots in your plant and as standard equipment for your products. It's a worthwhile investment any way you look at it.

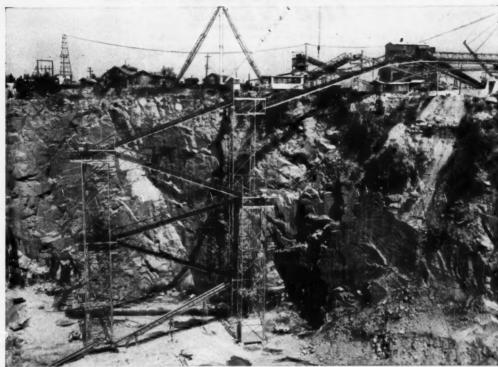
INLAND STEEL COMPANY 38 SOUTH DEARBORN STREET . CHICAGO 3, ILLINOIS

SALES OFFICES: Chicage • Davenport • Detroit • Indianapolis • Kansas City • Milwaukee • New York
St. Lauis • St. Paul

PRODUCTS: Sheets, Strip, Tin Mill Products, Bars, Plates, Structural Shapes, Sheet Piling, Reinforcing Bars, Pig Iron, Rails and Track Accessories







Rocks ride rubber escalator to cut conveying costs

B. F. Goodrich conveyor belts solve rock-handling problem

RUSHED rock used to be hauled out of this quarry in metal "pans" attached to a moving cable. But it was slow, costly, apt to break down.

Then engineers from the quarry company, working with B. F. Goodrich, designed the unusual conveyor belt system you see in the picture - five rubber escalators. Moving belts carry rock to the bottom belt in the staircase which dumps it onto the next and so on, up to the top—a distance of 268 feet. Today the B. F. Goodrich belts haul 400 tons an hour out of the quarry -21/2 times as much as before - without a moment's trouble or delay.

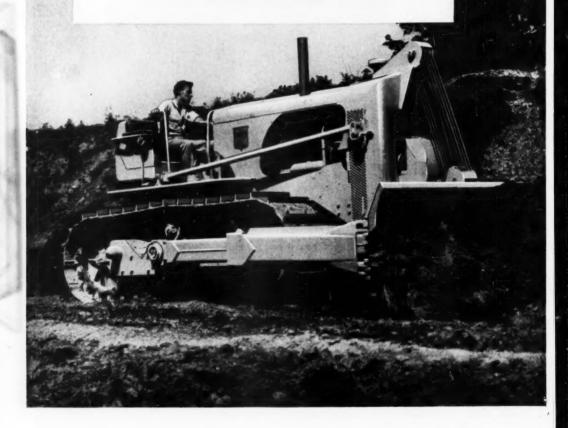
But the first belt in the series was a special problem. B. F. Goodrich engineers knew no ordinary belt would do because of the heavy impact when the rocks fall on it. The belt recommended to handle this job was the BFG cord belt, made of individual reinforcing cords that run the length of the belt. Each cord is completely surrounded by rubber. No cross threads tie them together - so they are free to give as chunks of stone strike the belt. The rubber takes the shock.

B. F. Goodrich developed this cord belt years ago, and has since made many improvements that make it first choice for many really tough jobs. One such improvement is "balanced construction". Now the layers of individual cords are built into both the top and bottom of the belt to give even greater impact resistance. Other construction features provide for proper troughing whether belt is empty, lightly or fully loaded, and permit longer centers, higher lifts to be used.

No matter what type or size of material you have to move, there's a B. F. Goodrich conveyor belt that can do it better, for less. Your local BFG distributor can show you how these longer-lasting belts can save you money or write The B. F. Goodrich Company, Industrial & General Products Division. Akron, Ohio. (Available in Canada)

the <u>NEW</u> OLIVER "OC-18"

the Operator's Dream come true!



THE OLIVER CORPORATION

400 West Madison Street, Chicago 6, Illinois



The easiest operating tractor you've ever seen—that's what you'll say when you see the new Oliver "OC-18" industrial tractor in action. Here's a tractor that has been designed specifically to make life as easy as possible for the operator. Just check this list of "easy operating" features—it puts the "OC-18" "way out in front as the tractor that gets more done...faster...every day.



1. Over-Ceater Clutch. The clutch bar runs across the full width of the dashboard. No need here for the operator to hunt for a single lever . . . to take his eyes off the work.



2, Air Steering is Stundard Equipment. You can steer the "OC-18" with just two fingers of one hand . . . because air steering is standard equipment.



3. Cold Weather Starting Aid... standard equipment on the Oliver "OC-18"... an approved aid that assures fast, easy starting in extremely low temperatures.



4. Push Button Electric Starting. Even on cold mornings, the husky starter of the "OC-18" gets the engine going...quick.



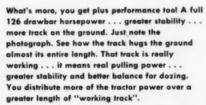
S. Center-Positioned Gear Shift Lever . . is located right where it's easiest to reach. There's no interference with operators' legs or other controls.



 Ample Leg Room . . . no cramped legs after a hard day's work with the "OC-18".
 Grouped controls assure plenty of leg room.



7. Convenient feet Parking Brakes, Conveniently positioned foot brakes are standard equipment on the "OC-18".



Try out this great new tractor yourself. Ask your Oliver Industrial Distributor to arrange a demonstration. When you see for yourself how easy it is to operate, you'll never be satisfied with any other big tractor.

For complete details and specifications see your Oliver Industrial Distributor or write direct to The Oliver Corporation, 400 West Madison St., Chicago 6, Illinois.



8. Comfortable, Twe-Men Seat plenty of room for two men in this upholstered seat, it's a big help in cutting down operator fatigue.



 Easy-Action Friction Threttle. The throttle is located at the right arm rest of the seat in the most convenient position for the operator.

A complete line of industrial wheel and crawler tractors





The OLIVER Corperation, Industrial Division
400 W. Madisins Street
Chicago 6, Illinois
Gentliemen:
Please send me literature on the Model "OC-18" industrial Crawler Tracter.
Name
Company
Dept
Address
City
Street





STRONGER-THAN-STEEL FIBERGLAS

crowns offer unlimited choice of vivid, permanent colors... with color molded all the way thru the safest crowns ever built. Shock-resisting ribbed design also available in air. craft grade aluminum.

Write for

SAVE MONEY

One size fits all heads . save time! duces inventories. Fully adjustable headband and ham. mock; can be changed in six seconds. Self-shaping and air. cushioned for comfort.





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ONSTRUCT METHODS AND EQUIPMENT

Volume 34, Number 12

DECEMBER 1952

Established 1919

Pay Dirt in This Issue

	ted wit	g
	for rive	ntling 57 per traffic while 515-ft center 'hrough middle, floated ashore
Corps of Engineers'	\$240	ortunity 60 -million program for 1953 for stateside contractors
Skillful tunneling tech	niques	se and Tunnels
	geniou	adframe
It's Your Business		Biggest Over-the-Road Crane 93
Job Talk		High-Production Crushing Plant 102
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December 1952

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Vol. 34-No. 12

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A Great Newspaper Scores Another 'BEAT'

KANSAS CITY STAR SOLVES PROBLEM OF HANDLING NEWSPRINT
—'INCOR' SPEEDS CONSTRUCTION OF UNDER-STREET TUNNEL

• Many of the nation's metropolitan newspapers haul truckload after truckload of newsprint over busy city streets. But not The Kansas City Star. This great paper moves the 70,000 tons it uses each year direct from railroad car to press, on what is said to be the only conveyor line of its kind in use today.

.

A month's paper supply is stored in a fine, new, fire-safe warehouse, concreted throughout with Lone Star Cement. And under busy Grand Ave., a new tunnel connects the warehouse with The Star's main building.

Building the tunnel without tying up heavy Grand Avenue traffic was a problem. The designers and builders solved it in the now-characteristic American way—the way builders the country over score a "beat" when time, traffic, weather, and form costs pose a problem—that is, by using 'Incor,'* America's FIRST high early strength portland cement. Result, earlier completion, less job overhead, minimum traffic interference.



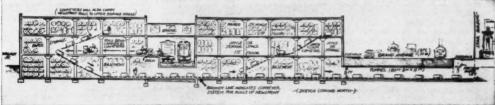
THE KANSAS CITY STAR
Paper Warehouse and Tunnel

Architects: NEVILLE, SHARP & SIMON

COLLINS CONSTRUCTION COMPANY

Ready-mix 'Incor' Concrete: STEWART SAND & MATERIAL COMPANY —all of Kansas City, Mo.

Sketch below shows how The Star handles newsprint, from railroad car to storage in new warehouse, thence by conveyor under railroad tracks and tunnet under Grand Avenue to presses in main building.





LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. "[ALBANY, N. Y. * BETHLEHEM, PA. * BIRMINGHAM BOSTON * CHICAGO * DALLAS * HOUSTON * INDIANAPOLIS KANSAS CITY, MO. * NEW ORLEANS * NEW YORK * NORFOLK PHILADELPHIA * RICHMOND * ST. LOUIS * WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 17 MODERN MILLS, 125,600,000 SACKS ANNUAL CAPACITY

Announcing

General Motors Better Highways Awards

\$194,000 in awards for the most practical solutions to America's critical highway problem

very American is intensely aware of the inadequacy of our roads and streets to meet today's highway transportation needs. Yet too few have given thought to a practical solution.

It is a difficult problem, because modern highways cost a lot of money. But lack of them is costing even more!

To encourage all Americans to think about this critical situation and come forward with practical solutions, General Motors is instituting the GM Better Highways Awards for the best essays submitted on the following

"How to Plan and Pay for the Safe and Adequate Highways We Need"

A total of 162 State, Regional and National Awards will be given for those entries which are considered best by an independent board of five judges. The following have accepted appointment to the board:

NED H. DEARBORN

President, National Safety Council THOMAS H. MACDONALD

Commissioner, Bureau of Public Roads, U.S. Department of Com-

CURTIS W. McGRAW

Chairman of the Board, The McGraw-Hill Publishing Company

DR. ROBERT G. SPROUL President, University of California

B. D. TALLAMY

Superintendent, New York State Department of Public Works and President, American Association of State Highway Officials.

Entries will be judged for originality, sincerity and practical adaptability not on literary merit.

To help you in preparing your entry, background information about the present highway crisis has been compiled in "The General Motors Better Highways Awards Facts Book." A copy, containing official contest entry form,

will be sent you on request, or can be obtained from any General Motors car or truck dealer.

Contest closes midnight, March 1, 1953. Winners will be publicly announced as soon thereafter as the judging can be completed.

CONTEST RULES

1. WHO MAY COM-PETE: Any individual who is a resident of a state of the United States or the District of Columor the District of Colum-bia may compete for an award, except Contest Judges and the members of their immediate

2. WHAT IS TO BE SUBMITTED: Each contest participant shall submit an original essay, with any supporting material or data the par-ticipant may desire, on the subject

"How to Plan and Pay for the Safe and Adequate Highways We Need"

3. HOW, WHEN, AND WHERE ENTRY IS TO BE SUBMITTED: To be eligible for award no be eligible for award consideration, each essay must be submitted with an official entry blank which may be secured from any General Motors car or truck dealer or by writing to

General Motors Berter Highways Awards General Motors Building Detroit 2, Michigan

Essays may only be sub-mitted with a completed official entry blank, and must be mailed to the address immediately

no pe eligible for award consideration, a contest entry must be postmarked not later than midnight, March 1, 1953, and must be received by March 14, 1953. To be eligible for award

GENERAL RE-QUIREMENTS AND CONDITIONS CON-CERNING ENTRIES:

mitting an essay agrees to be bound by all rules of the contest. Each essay shall be in English, on one side of the paper only, and preferably type-written. Illegible essays will be automatically disqualified. While brevity is suggested, no limitation is placed on the proper of the proper of words they believe necessary. No essays will be returned. Upon submission, each essay and the contents and ideas there in become the property in become the property of General Motors Corof General Motors Corporation which shall
have the exclusive right
to make unlimited use,
in whole or in part, of
the same. A participant
represens by submitting
an essay that it contens,
in whole and in part,
part further represents
that such essay has not
been submitted, or in
any manner disposed of,
to other than General
Motors Corporation.

5, AWARDS: Contents

Notor's Corporation.

5, AWARDS: Contents
of essays will be judged
for originality, sincerity,
and practical adaptability. Awards in the number and amounts listed
below will be made as
determined by a Board
of judges.

SIX NATIONAL AWARDS

First Award, \$25,000; Second Award, \$10,000; Third Award, \$5,000; Three Honorable Men-tion Awards, each \$3,000.

NINE REGIONAL

For the best essay sub-mitted from each of nine regional sections* of the United States, each \$2,500.

THE GENERAL MOTORS BETTER HIGHWAYS AWARDS

"How to Plan and Pay for the Safe and Adequate Highways We Need"

SIX NATIONAL AWARDS

FIRST	A	WAR	D										\$	25,000	
SECON	D	AW	AR	D									5	10,000	
THIRD	A	WAF	RD				,						\$	5,000	
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NINE REGIONAL AWARDS

For the best essay submitted from each of nine regional sections* of the United States . . . each \$ 2,500

147 STATE AWARDS

S	ta	te	a	nd	I	Di	sti	ric	t	of	(Co	lu	every imbia	
														each	\$ 1,500
														o for	

Columbia each \$ 500 *States included in each region are listed in "The General Motors Better Highways Awards Facts Book."

*States included in each region are listed in "The General Motors Better Highways Awards Facts Book."

147 STATE AWARDS

147 STATE AWARDS
49 First Awards, one for each state and the District of Columbia, each \$1,500.
98 Honorable Mention Awards, two for each state and the District of Columbia, each \$500.
The selection of award winners will be made from all entries as a group. National award winners will be selected first and thereupon automatically eliminated winners will be selected first and thereupon auto-matically eliminated from further consider-ation. Regional award winners will be selected next from the remaining entries and will auto-matically upon selection be eliminated from further award consider-ation. From the entries remaining after the selec-tion of national and regional award winners, state award winners will be selected. No participant may win more than one award. In the event one award. In the event award, or in the twent that an essay of an employe of General Motors Corporation, or one of its domestic subsidiaries, is an award winner, duplicate awards will be made.

6. ANNOTINCEMENT.

of ANNOUNCEMENT
OF AWARDS: The
names of all award winners will be announced
as soon as possible after
the close of the contest. 7. The decision of the Board of Judges with respect to awards and all other contest matters are final and binding on each participant.

8. The contest and awards made in connec-tion with the contest are subject to all applicable local, state, and federal laws and regulations.

Address all entries to: General Motors Better Highways Awards, General Motors Bidg., Detroit 2, Mich.

YOU CAN'T DIG DIRT

There are a lot of people who forget that output depends on a lot of other things besides the digging functions. Take Dragline work. That ditch will go for miles back in the country before it's done and it isn't going to be "dance floor" travel either. These rigs will be in a lot of difficult places before the trailer picks them up for another job. It's those tough places that cost time and money.

When you have Northwest steering on your larger machines there is no worry about the difficult spots. Positive traction on both crawlers while turning as well as when going straight ahead, reduces the need for mats and takes you in and out of the places that give other equipment trouble. Northwest Crawlers with their self-cleaning action have been proved in the miles of travel characteristic of Dragline and Pullshovel work. They require little maintenance — they are trouble-free and they take you there — and back.

Look at the tread trail of a Northwest Crawler—no jerking—no digging in no terrific overload of strain caused by shoving the machine around with one live crawler. Northwest Positive Traction saves money by getting you through the difficult places easier and faster.





Successful Contractors
Stay Successful
With Proved Equipment

B.F. Goodrich



Tires roll over razor-sharp rock —defy cuts and bruises

LEAD and zinc come from rock that shatters into countless sharp, jagged splinters. Trucks hauling these metallic elements roll over roads filled with this abrasive, razor-edged rock—rock that slashes and chews tires to shreds in a matter of weeks.

Not so with the tires pictured above. They are B. F. Goodrich tires, designed to carry giant loads in just such operations. The Universal tread is compounded to resist rock bruises and cuts. Husky, wedge-shaped lugs give positive two-way traction, protect against side slippage even on soft ground.

Like all B. F. Goodrich off-the-road tires of 8 or more plies, Universal tires are built with the exclusive nylon shock shield. Layers of rubber-coated nylon cords under the tread rubber stretch together under impact, protect the tire body from the smashing shocks of off-the-road work.

This shock shield gives you the added savings of greater tire mileage, increased bruise resistance, more recappable tires and less danger of tread separation. All these advantages, yet the nylon shock shield costs nothing extra. In sizes 12.00 and larger, Universal tires have double nylon shock shield—twice the protection for even the roughest work. No wonder operators across the country report more

hours of service with B. F. Goodrich tires.

B. F. Goodrich builds on or off-theroad tires to meet all your needs. See your local dealer—he'll be glad to show you how to save money and get longer tire life—or write direct to: The B. F. Goodrich Co., Akron, Ohio.



WIRE ROPE



This is the most economical rope we've ever made for excavating and construction

JUST MENTION wire rope and most everyone thinks of Roebling. For one thing, Roebling made the first wire rope in America. But what's more, we've always led in developing better wire rope for the needs of every branch of industry.

Roebling Preformed "Blue Center" Steel Wire Rope is today's best bet for excavating and construction. It's safe, dependable and stands up under rough going. It saves you time and cuts costs.

There's a Roebling wire rope of the right specification for top service on any job. Call on your Roebling Field Man for his recommendations. John A. Roebling's Sons Company, Trenton 2, New Jersey.



It's Your Business · · ·

There's Big Doings Along the Equipment Front

IT'S A WISE CONTRACTOR who knows where his equipment is coming from today because of the numerous mergers and consolidations going on in the construction machinery business. As the big companies round out their lines, competition gets tougher, which means better machines, better service and better deals all around for the buyer and user. Let's take a look at some of the more recent equipment moves:

International Harvester Co. just bought the Frank G. Hough Co. of Libertyville, Ill., and its full line of Payloader front-end loaders. And this isn't all; look for International to get into the big rubber tractor

field by acquisition or development.

Allis-Chalmers Mfg. Co. jumped into the big rubber earthmover business by buying LaPlante-Choate, of Cedar Rapids, which now gives A-C a nice line of two-wheel tractors, two big scrapers, a couple of big hydraulic dump wagons, and bulldozers and sheepsfoot rollers—whenever they care to resume production on these last two units. The working arrangement with Baker for bulldozers still holds.

Caterpillar Tractors had just about everything they needed for a full line except front-end loaders, so they took in the Trackson Co, with whom they had

long a distribution tie-up.

A chain reaction of mergers was started with the consolidation of Hamilton and Lima Locomotive Works (Lima shovels) into the Lima-Hamilton Corp. Then it stepped out and gathered Austin-Western into the fold; then Baldwin Locomotive wrapped them all up into the Baldwin-Lima-Hamilton Co.

Pettibone Mulliken Corp. diversified its line by purchasing a whole string of fairly small companies. In the construction field it now owns: George Haiss Mfg. Co., Universal Engineering Corp., Uneco Corp., Rome Grader Corp., and Hammermills, Inc.

White Motor Co. now owns Sterling Motor Truck Co., which puts them into big-time earthmoving; Pullman-Standard bought Isaacson Iron Works Co., along with the scraper and bulldozer business; and Wooldridge is assembling Mack trucks on the West Coast; Westinghouse Air Brake just bought LeRoi; Pioneer took over Jaeger's bituminous spreader; Blaw-Knox now owns the Foote Co. (pavers and bituminous spreaders).

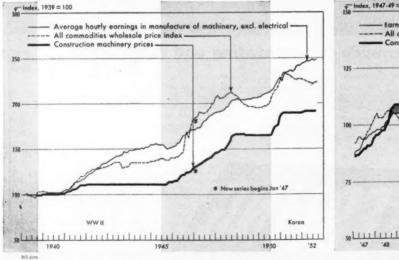
And there's more to come.

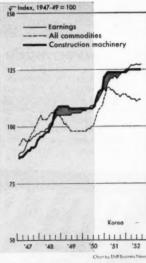
How About Equipment Prices?

IS CONSTRUCTION EQUIPMENT priced high enough today in comparison with other commodities and wage scales, or are you contractors getting a bargain every time you buy a new rig? Are our machinery manufacturers caught in a squeeze between rising costs and price controls, or should they be satisfied with present selling prices?

From a study of the accompanying charts, the answer is according to how you base your figures. The curves in the left-hand chart show cost index comparisons based on 1939 costs. These reveal that prices of construction equipment have lagged far behind wages and the wholesale commodities. On this index base, equipment today certainly is a bargain.

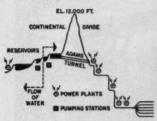
But government price control authorities don't like (Continued on page 12)





CONSTRUCTION EQUIPMENT PRICES are all a matter of how you look at them, according to these charts. Based on 1939 prices, they are far below wholesale commodity and wage rates. If you take 1947-1949 prices as a base, they are well above wholesale commodities, but still under wage levels.

Colorado
Big Thompson
Project



Here's how water will be tunnelled from West to East below the Continental Divide in one of America's spectacular construction projects of today!



The Colorado-Big Thompson Project is "big" in every way. It's a \$150,000,000 Bureau of Reclamation project, that will gather waters on the west slope of the Continental Divide at the source of the Colorado River, 1-1/2 miles above sea level. Water will be transferred through a 13.1 mile long tunnel beneath the Divide to the eastern slope, to feed irrigation systems in northeastern Colorado. The entire job involves 47 million yards of embankment and excavation, 15 dams, 7 dikes, 10 reservoirs, 24 tunnels, 6 power plants, plus a multitude of pumping stations, canals, siphons and other construction projects. On this mammoth job you will find practically every kind of construction, every kind of material handling, every kind of material to be moved! Contractors on this huge project are using

many Lorains . . . as shovels, draglines, cranes . . . on crawler and rubber tire mountings.

Big jobs like this one are made up of many individual operations . . . and that is an important reason why Lorain selection unlimited can best fill the needs of contractors — large or small. There are shovel sizes from 1/2 to 2-yd. classes . . . crane capacities up to 45-tons . . . plus the world's most complete selection of mounting types to suit every working condition.

Big jobs—or small—it will be well worth your while to present every shovel-crane problem to your nearby Thew-Lorain Distributor. He can help you make more money on every bid.

THE THEW SHOVEL CO., LORAIN, OHIO

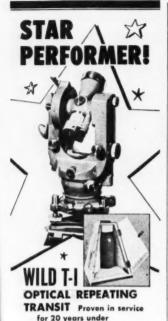
WINSTON BROS., St. Paul, Minn., have a \$10 million dollar contract. They don't gamble with performance this Lorain 50-I dragline with 1 yd. bucket is shown working on a 3-1/2 mile section of a feeder canal. WINSTON BROS. make a quick switch with their Lorain SO-I. Here the "50" is converted to a 1-yd. shovel to handle fast grading. The same machine does two jobs, by a simple front-end change. A 25-ton Lorain Moto-Crane, Model MC-504W, is another important unit in the WINSTON BROS. fleet. It highballs on the job at 30 m.p.h. speeds. Here, it is shown setting a 4750 lb. I-beam for storage tank construction.







THEW-LORAIN.



CUTS JOB TIME
ON ANY
CONSTRUCTION AND
ENGINEERING PROJECT

tough field conditions.

CHECK THESE ORIGINAL



- Sate estimation to 6".
 Micrometer prevents gross reading errors.
- ★ Optical plummet for greater reliability and speed.
- Ball bearing vertical spindle of hardened steel.
 Compact design with all parts
- fully sealed.
- ★ Complete "Behind Instrument" operation.

WILD instruments, Swiss precision engineered, excel in craftsmanship, durability and sturdiness.

For details phone or write for Bklt. CM 12

Complete repair & servicing facilities by factory specialists.

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SURVEYING INSTRUMENTS SUPPLY CO
OF, AMERICA, INC.
26 COURT ST. BROUKLYN 2, N. Y. TRIANGLE 5-0644

IT'S YOUR BUSINESS . . .

Continued from page 10

the 1939 cost base for comparison—they prefer the 1947-1949 base for index comparisons, as shown in the right-hand chart. By simply ignoring the fact that equipment prices had lagged behind wages and other commodities since 1939 up to 1947, and then starting out on that date on an even index base, they can show that equipment manufacturers aren't now entitled to any price relief.

SOME BIG CONTRACT AWARDS OF THE MONTH

Merritt-Chapman & Scott Corp., 17 Battery Pl., New York, N. Y., 15 deepwater piers, including 10 of unique buoyant design, for New York State Thruway bridge across Hudson River at Nyack, N. Y., \$11,-772.520.

Bechtel Corp., 220 Bush St., San Francisco, Calif., refinery of Ferndale, Wash., along with 40-mi pipeline to connect with Trans Mountain Edmonton-Vancouver oil pipeline, for General Petroleum Co., \$35,000,-000.

F.&S. Construction Co., Phoenix, Ariz., 2,100 homes as own development, Phoenix, \$20,000,000.

E. I. du Pont de Nemours & Co., Wilmington, Del., nylon yarn plant at Chattanooga, Tenn., with own construction division, \$9,000,000.

Del Balso Construction Corp., 500 Zerega Ave., New York 61, N. Y. 2.89-mi Bronx River Parkway, Westchester and Bronx Counties, N. Y., for N. Y. State Dept. Public Works, \$4,300,142.

M. J. Boyle, 2480 Elston St., and Paschen Bros. Construction Co., 2739 Elston St., Chicago, Calumet Intercepting Sewers for Sanitary District of Chicago, \$3,696,050.

Ebasco Services, 2 Rector St., New York, refinery at Florence, Ariz., for Proven Oil & Refining Co., \$18,000,-000.

C. L. Peck, 816 W. 5th St., Los Angeles, and Cahill Bros., Inc., 26 Sansome St., San Francisco, 9 brewery buildings at San Fernando, Calif., for Anheuser-Bush, \$15,000,000.

Ditmars-Dickman-Pickens Construction Co., 115 W. 7th St., Little Rock, Ark., and W. S. Bellows Construction Co., 716 No. Everton St., Houston, Tex., aluminum reduction plant at Gum Springs, Ark., for Reynolds Metals Co., \$30,000,000.

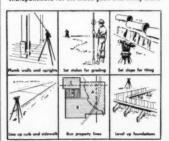
White Universal Level-Transit...



the most versatile instrument you can own!

YES, the White "Universal" Level-Transit is the most practical, complete instrument on the market. Now available in a new improved model — the No. 3000 — with internal focusing, coated optics, guarded vertical arc. In fact, every feature to assur you lifetime durability and accuracy. And the price is only \$185*, complete with tripod. See your dealer, or write DAVID WHITE COMPANY, 343 W. Court Street, Milwaukee 12. Wisconsin.

Indispensable for all these jobs and many more





We offer the most expert REPAIR SERVICE on all makes, all types of instruments.

Price subject to change without notice.

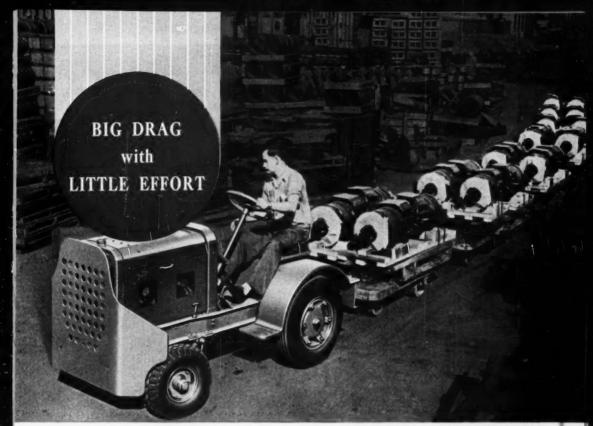
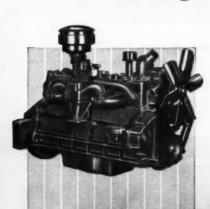


Photo courtesy Clark Equipment Company, Battle Creek, Michigan

Chrysler-powered
Clarktor pulls more
than two and a half
times its own weight



There was a time when a load like this was considered too heavy for one trip, Today, pulling loads this big . . . and bigger . . . are a daily experience for towing tractors. Manufacturers depend almost completely upon mechanized plant transportation to put materials, parts and assemblies in the right places at the right times . . . to maintain the pace of modern-day mass production.

Here Chrysler Industrial Engine Model 6 teams up with a Clarktor 21 to move twenty-four 700-pound street car motors from production line to shipping dock. This is but another fine example of the workhorse-dependability of Chrysler High-speed and High-compression . . . of Chryslerengineered Power at Work.

Chrysler offers a large number of options from which you can "custom-equip" industrial engines to meet your own specifications. Propane or natural gas-burning carburetors, updraft or downdraft carburetion, standard, fungustreated or corrosion-resistant electrical systems, gyrol Fluid Coupling or Torque Converter ... to name only a few.

Despite all these advantages, Chrysler Industrial Power is not expensive. Production-line methods adapted to specialized industrial engine building, provide a custom-built engine at mass-production prices.

Chrysler Power can work for you, too. See the nearest Chrysler Industrial Engine Dealer. Let him recommend one of nine basic Chrysler Engines. If your problem is special, write: Dept. \$12, Industrial Engine Division, Chrysler Corporation, Trenton, Michigan.

CHRYSLER

Industrial Engines

HORSEPOWER



WITH A PEDIGREE

MAINTAIN



TUNE IN . . . YEXACO STAR THEATER starring MILTON BERLE, on television Tuesday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.



TEXACO

FULL PRESSURE under ALL conditions...

Use the recommended Texaco air compressor oil

You can keep full air pressure at your drills only by keeping your compressors running cleanly and efficiently. Here you must depend on effective lubrication . . . and because no one oil can assure this under all operating conditions, there is a complete line of Texaco air compressor oils . . . one exactly right for your conditions.

For example, a Texaco straight mineral air compressor oil is your best bet for normal conditions. If "wet cylinders" are causing excessive wear, you should use a Texaco compounded air compressor oil. If rusting is a problem, you can overcome it by using a Texaco rust-inhibited air compressor oil.

FOR YOUR ROCK DRILLS use *Texaco Rock Drill Lubricant EP*. You get superior lubrication plus longer drill life and reduced maintenance costs because of its "extreme pressure" properties. In addition, it protects against rust whether drills are running or idle.

A Texaco Lubrication Engineer will gladly help you select the proper lubricants to get top performance from all your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT





Are the drives



Leading manufacturers of construction machinery have found by years of experience that Diamond Roller Chain Drives provide the trouble-free, long life performance vital to building and keeping a high reputation.

Versatile as the machinery itself, Diamond Roller Chains serve on engine to main shaft drives, shaft to shaft or many shafts, and conveyor drives with equally high efficiency and long-life economy.

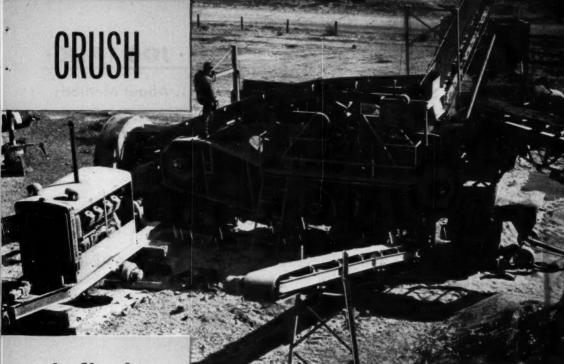
That is why the question, "Are the drives Diamond

Roller Chains?" should always be asked. It is also why the answer is so often "Yes".

DIAMOND CHAIN COMPANY, Inc.

Dept. 418, 402 Kentucky Avenue, Indianapolis 7, Indiana Offices and Distributors in All Principal Cities





inflation out of your dollars

Budget-minded "Caterpillar" Diesel Engines deliver 100 cents in work for every \$1 worth of fuel. Compare your fuel costs with those of Schmidt Construction Co., Grand Junction, Colo., building U. S. Highway 85-87 north of Pueblo.

The company reports that its "Cat" D17000 Engine is producing power to crush 3,350 tons of material per day for only \$6.40 worth of fuel. That's more than five tons per penny! The money-saving Diesel is the heart of a Master Tandem Cedarapids Crushing Plant.

Same tonnage is being handled by the "Caterpillar" D13000 Diesel Engine that powers the company's Bucyrus-Erie Shovel. Fuel cost: 64 cents an hour. Strong-arm "Caterpillar" Diesel Engines are a two-way hedge against cost-boosting inflation. Available up to 500 horsepower, they burn low-cost, non-premium fuel — and they do it without fouling! And they slash expensive maintenance costs because they are quality built for a long, productive life.

"The engine on the shovel," reports Walter R. Schmidt, of Schmidt Construction Co., "ran 6,800 hours before the first overhau. We feel well satisfied with its performance."

Get the Diesels that won't waste your money. "Caterpillar" Diesel Engines are available in machines built by leading equipment manufacturers. Specify "Caterpillar" power in the equipment you buy.

CATERPILLAR, PEORIA, ILLINOIS

CATERPILLAR

DIESEL ENGINES
TRACTORS - MOTOR GRADERS
EARTHMOVING EQUIPMENT



THE GREATEST SERVICE ORGANIZATION OF ITS KIND IN THE WORLD . . .

Near you there is a Briggs & Stratton service organization — factory trained and supervised — ready to tune up, repair, or even rebuild your Briggs & Stratton engines with original Briggs & Stratton parts.

If your Briggs & Stratton engines are not busy during these winter months, now is the ideal

time to have them serviced — to insure continued peak performance for busy periods ahead.

Only Briggs & Stratton maintains such complete world-wide authorized service facilities — a big "plus" that you get only when you specify Briggs & Stratton engines on the gasoline powered equipment you buy.

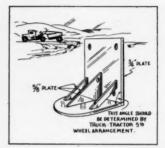
Briggs & Stratton Corporation, Milwaukee 1, Wisconsin, U. S. A.



In the automotive field Briggs & Stratton is the recognized leader and world's largest producer of locks, keys and related equipment.

* JOB TALK *

... About Methods



Fifth Wheel Adaptor

Do you ever have to move a two-wheel towed unit while the prime mover is used with another trailing unit? If you do, you may be able to profit by a fitting built by Master Mechanic Jack Ehl of the C. O. Mitchell Construction Co., Birmingham, Ala.

He had to move Tournarocker trail units without benefit of the power units. So he built an adaptor to tow Tournarockers from job to job behind truck-tractors. The accompanying sketch shows how he built it and the general dimensions.

The angle between the horizontal plate attaching to the fifth wheel, and the vertical member, bolted to the towed unit, is determined by the towing truck's fifthwheel arrangement. The adaptor is a welded assembly and low in cost, but a fairly good grade of steel should be used. Purpose of the hole in the center brace is to receive the hook or cable from a crane for lifting purposes.

Wire Mesh Fastened to Steel Stack

A powder-actuated tool simplified the fastening of heavy wire mesh to the inside of a steel stack that had to be lined with fire clay. The job was done by Schaefer Bros. Co., Cleveland, inside a smokestack 96 ft high and 5½ ft in diameter, using a Drive-It cartridge-powered tool.

Normally, drive pins penetrate steel when driven for fastenings. For this job, Drive-It Engineers developed a special pin that would not protrude on the outside of the %-in. boiler plate. Although it

(Continued on page 22)

DON'T LET THIS HAPPEN TO YOU! Protect Your Investment With

FlameZel Tarpaulins meet the fire resistant requirements at Federal. Specifications CCC-D-746. Manufactured under Wenzel Patents No. 2463983 and others.



EXTRA STRENGTH AT NO EXTRA COST!

Now all FlameZel Tarpaulins and Windbreaks are equipped with heavy duty rope bound in edges all around. Prevents rips and tears from starting; grommets won't

FlameZel Tarpaulins and Windbreaks available for IMMEDIATE DELIVERY from distributors in all principal cities. Mfd. by H. Wenzel Tent & Duck Co., St. Louis 4, Mo.





HT4 Handles 120 Yards of Rock Each Hour!

TRAXCAVATOR Shovels can stand up to machine-busting rock and broken concrete and still turn in big production.

Henry Shore Co., contracting firm of Littleton, Colorado, proved this on a highway project near Castle Rock. The company has the grading, structure, and riprapping contract—and "Caterpillar"-built Equipment is doing the job.

An HT4 TRAXCAVATOR Shovel, equipped with a skeleton rock bucket, loads out the broken pavement from the old highway. The material is jagged, heavy and

There's a load of abuse in broken paving, but the HT4 TRAXCAVATOR Shovel is built to take it and keep coming back for more. This skeleton rock bucket-equipped HT4, owned by Henry Shore Co., loads out 120 yards of debris an hour — then spreads it on new fill for riprap.

hard to handle — yet the HT4 loads out a 6-yard truck in less than three minutes. The broken paving and quarry rock is used as riprap and the multi-purpose HT4 has the job of spreading the piled material over the edge of the fill.

You'll find a TRAXCAVATOR Shovel's versatility and high-production can return big profits on your projects . . . and your "Caterpillar" Dealer can show you how and where. Call pn him or write direct.

CATERPILLAR TRACTOR CO., Peoria, Illinois

TRACKSON

A SUBSIDIARY OF CATERPILLAR

TRAXGAVATOR SHOVELS
PIPE LAYERS
ANGLEFILLERS







Model FS-6A. Now furnished with a 6 H.P. engine, providing plenty of reserve power under all conditions, and vastly improved power take-off. Vibrator frequency (up to 7500 VPM) and amplitude are carefully balanced for maximum progress and thorough consolidation. It is available with 3 vibrator heads, for thick or thin sections. Shafting is furnished in 7' and 14' lengths up to 28'. Quickly adaptable to concrete rubbing, wet or dry, and drilling. Built to stand severe usage. By any comparison, it's the finest engine-driven vibrator on the market and the best buy! Complete

the details on request. **POWERFUL, LIGHTWEIGHT** JACKSON ELECTRIC VIBRATOR 21/4 H.P. MOTOR. FAST - RELIABLE

Has more than ample power for uninterrupted placing of the stiffest mixes, even when using the maximum length of shaft (28'). Provides 8,000 to 10,000 VPM. Built for troublefree service.

PLUGS INTO LAMP SOCKET

Wherever 115 volt, 60 cycle, single-phase AC or DC is available.

EXTREMELY HANDY

May be had with any length of shaft up to 28' and choice of 3 vibrator heads. And since it weighs but 50 lbs. it is ideal for thin or thick sections, high places and reaching those otherwise difficult-to-get-to spots. Also ideal for incasing structural members and similar applications.

QUICKLY ADAPTABLE TO CONCRETE RUBBING

Wet or dry, and drilling. A relatively inexpensive vibrator that will do a whale of a job.

VIBRATORS FOR ALL PURPOSES -FOR SALE OR RENT

at your Jackson Distributor. Mass concrete placement, highway, airport, and municipal paving. Asphalt and Soil Compaction. Power Plants.

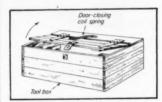
ELECTRIC TAMPER & EQUIPMENT CO., Ludington, Mich.

JOB TALK . . . Continued from page 18



gave the holding strength required, there are no unsightly points extending from the stack.

The pins were driven on 24x18in. centers and the heavy wire mesh placed and secured to the drive pins with Tinnerman speed nuts on each side of the mesh. Then the special fire clay was applied to the mesh. The job required 2,000 drive pins.



Spring Lifts Heavy Lid

Put a heavy door-closer spring of the torque type on that big tool box to help lift its heavy lid. Be sure to install the spring so that it will operate to open the cover. instead of closing it, as it would do on any normal door.

Arrange it so that most of the weight of the lid will be lifted by the spring, leaving only a few pounds unsprung so that the cover will stay down. If necessary, install two or more springs. They can be obtained in various strengths and sizes.

Crane Has Sander

Not all the heavy lifting for railroad maintenance is adjacent to the tracks where rail-mounted cranes can do the work. Accordingly, the Boston and Maine Railroad uses a Link-Belt Speeder (Continued on page 28)



a merry holiday season

 $to \ all$





and a joyous new year



Now... the famous MOTOR SCRAPER joins the (AC) line

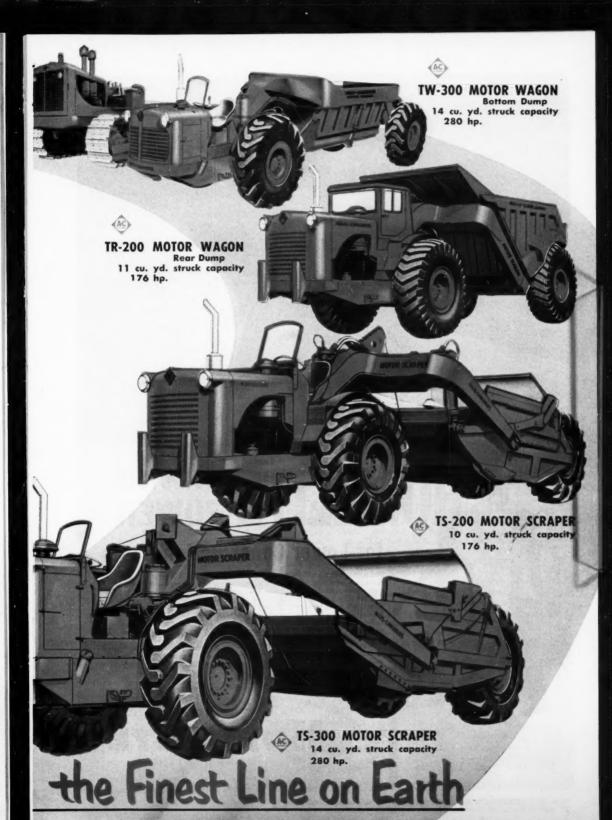
In order to serve you more completely, Allis-Chalmers has extended the *Finest Line on Earth* by adding the famous MOTOR SCRAPERS and MOTOR WAGONS formerly manufactured by La Plant-Choate. This customer-accepted line meets A-C's 4-point quality requirements in every way.

These big self-propelled units are designed for your job . . . easy loading, high-speed hauling and quick, clean ejection. They're built to take it . . . job-tested, job-proved through years of use all over the world. Like Allis-Chalmers other earthmoving equipment, the MOTOR SCRAPER is easy to operate . . . simple to service.

Today's jobs require a more careful selection of equipment. That's why you'll be money ahead if you make your nearby industrial A-C dealer your headquarters for crawler tractors, motor graders, MOTOR SCRAPERS and MOTOR WAGONS. Stop in soon to discuss your job requirements and see his complete parts and service facilities.



ALLIS-CHALMERS





USE HOMELITE HIGH CYCLE POWER

for Lower Construction Costs

Put a Homelite Dual Purpose Generator on the job and you open up the door to a new field of cost cutting operations . . . faster, easier, lower-cost operations with high efficiency, high cycle tools.

With this lightweight, carryable Homelite for example you can use the new high cycle concrete vibrators that are faster, more trouble free and

require only one man instead of three to operate.

You can use lighter-weight, faster, easier-to-handle high cycle drills, saws, grinders, chain saws . . . tools that not only perform better but also require much less maintenance.

much tess maintenance.

What's more, with this same Homelite Generator you can operate all standard universal hand tools or floodlights. Because it's a dual purpose generator... the first of its kind to provide both 110 volt and high cycle power... the most practical generator for those who seek newer, more efficient ways to get things done.

Write for a free demonstration.



CARRYABLE PUMPS . GENERATORS BLOWERS . CHAIN SAWS



"MAGIC-CARPET" MAKER

SPREADS **Material Evenly**

COMPACTS to Uniform Density

LEVELS Automatically Without Forms



THE BARBER-GREENE TAMPING-LEVELING FINISHER

When the job calls for the highest quality bituminous surface, you'll do it best with the B-G Tamping-Leveling Finisher.

With this superbly designed machine, you are able to lay every type of mix—hot or cold—from clay stabilized gravel to hightype sheet asphalt. Whatever type mat you are laying, the B-G Finisher automatically measures the correct amount of compacted material - then simultaneously tamps, levels and strikes off to produce a ripple-free surface that is maintained under rolling and

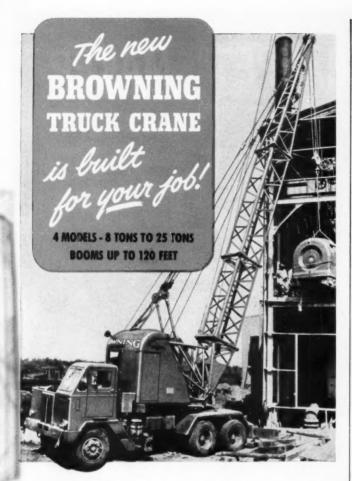
traffic. Because the material is compacted while it is being laid, you are assured of a surface of uniform density. And with the B-G leveling principle you compensate even for abrupt changes in the subgrade.

It will pay you to investigate this unequalled, universally preferred method of paving streets, highways, runways, parking lots, tennis courts and similar jobs. You will learn, for example, how the B-G Finisher saves truck time, minimizes rolling and reduces the size of crew. Investigate today!

Barber-Greene

Aurora, Illinois, U.S.A.





ROWNING Truck Cranes give you independent control of hoisting and lowering, boom radius, rotating, traveling and steering—separately or simultaneously. This exclusive Browning feature speeds up operation and makes your crane more productive on any kind of job—straight crane, clamshell, dragline, backhoe, shovel, magnet or piledriver.

And your Browning will stay on the job. Maintenance is simple and easy, reducing down time to a minimum. The well-known ruggedness of Browning design keeps these cranes working for years.

Browning's 53 years of crane-building experience and business integrity assure you a sound crane investment. Write for complete specifications of the model built for *your* job.



THE BROWNING CRANE AND SHOVEL CO.

163rd and Waterloo Road, Cleveland 10, Ohio JOB TALK ... Continued from page 22



HC-70 truck crane for countless off-the-track jobs.

Snow and ice are quite common in the Northeast, but this crane never stops. The maintenance department has fitted it with a regulation locomotive sander to drop grit ahead of the traction wheels on both sides of the crane. And there are dual delivery pipes on each side for more accurate sanding under each tire.



Durable Pickup Top Light in Weight

An Oakland, Calif., contractor wanted a durable, yet lightweight, top for the body of his small pick-up truck. He installed a simple and inexpensive cover by assembling a canopy of galvanized corrugated steel sheet over a framework of light steel channels.

Check the Accelerators

On pages 60 and 61 of our October issue we published tips on concreting during cold weather—as practiced by the Austin Company, Cleveland. In Item No. 3, dealing with accelerators and anti-freezes, the last sentence should read: "Never use calcium chloride, nor any admixture containing calcium chloride, with metallic hardeners."



95% of your yardage can now be handled with machines completely lubricated by just 3 Shell products*

*SHELL RETINAX A GREASE . . . a superior new multi-purpose grease for all types of heavy-duty automotive vehicles. It does the job of four or more specialized greases—yet only one gun is required.

Recommended for chassis (all points), wheel bearings, universal joints, and water pumps. Shell Retinax A gives you better protection against wear and washing out.

*SHELL SPIRAX EP†... an exceptional "alloy type," Extreme Pressure gear oil. Shell Spirax EP is recommended for rear axles of the hypoid, spiral bevel, and spur gear types, as well as for heavy-duty transmissions. It is extremely stable . . . has long-lasting anti-rust and film strength properties. Results: longer gear life, lower maintenance costs.

*SHELL ROTELLA OIL . . . for all engine lubrication, Shell Rotella Oil is a new, fortified, extra heavy-duty lubricant which has set new standards of performance in high-speed diesel and heavy-duty gasoline engines.

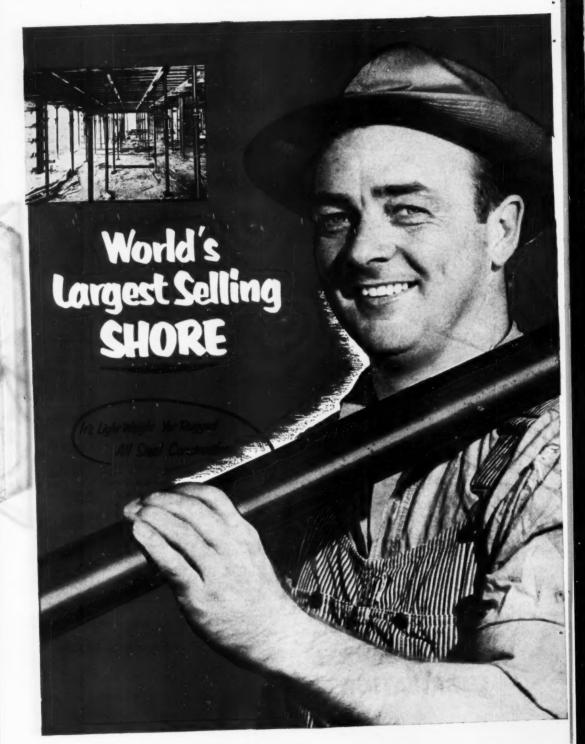
By maintaining clean engines and minimizing sludge formation, piston lacquering, ring and valve sticking, and port clogging, Shell Rotella Oil extends periods between overhauls, reduces parts replacement costs, and gives you reduced oil consumption.

†Some manufacturers recommend a straight mineral oil for gear lubrication. Your Shell Lubrication Engineer will suggest the proper lubricant in such cases.

SHELL" 3-BARREL"
LUBRICATION

SHELL OIL COMPANY 50 West 50th St., New York 20, N.Y. 100 Bush St., San Francisco 6, Cal.

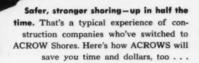
Please send me literature describing the 3-Barrel plan of lubrication.



Page 30 — CONSTRUCTION Methods and Equipment — December 1952



ADJUSTABLE STEEL SHORES



1, 2, 3, and Acrows are up-three quick, simple steps. Safe, sure support in less than a minute.

One-Man Operation - one unskilled man can erect an Acrow faster than three men can erect a conventional shore.

Adjust To Any Job-working ranges from 3' 4" to 15' 6". Flat type head fits any size stringer. No redesigning of formwork necessary.

> Safe - all steel construction lasts indefinitely. Working load fully established and guaranteed.

Self-Cleaning - patented stud on collar automatically cleans thread. Instantly ready for your next job.

For fast, safe, economical shoring you can't beat ACROWS. Convince yourself try ACROWS on your next job. Over a million now in use on major construction.

Acrow- The World's Largest Selling Shore

UNITED STATES OFFICES

Chicago, Mlchigan 2-1010 New York, LExington 2-7595 Boston, DEvonshire 8-7174 Philadelphia, LOcust 7-5553 Atlanta, Emerson 3716 Houston, Underwood 8514 Dallas, Riverside 6051 Birmingham, 7-5151 Los Angeles, Lomita 2889 San Francisco, ATwater 2-1442

ASSOCIATE COMPANIES

Acrow (Canada) Ltd., Montreal Acrow Venezuela S.A., Caracas Acrow Brazil S.A., Rio de Janeiro Acrow Uruguay S.A., Montevideo Acrow Argentina S.A., Buenos Aires Acrow Peru S.A. (Ingenieros), Lima Acrow (Engrs.) Ltd., London Acrow Engrs. (Pty.) Ltd., Johannesburg Acrow Engrs. (Pty.) Ltd., Sydney

ACROW, INC., Dept. CM12, 510 North Dearborn St., Chicago 10, Illinois

Please send me the following free bulletins (Please Check)

☐ Calumn Clamps

"Our Whites pay off 3 ways"

Reports Ralph H. Anderson,
President, W. E. Anderson Sons Co.,
Columbus, Ohio



R. H. ANDERSON's progressive company has a fleet of 50 Whites that hauls 3 tons per minute, travels more than $2\frac{1}{2}$ million miles a year from their ready-mixed plants and 8 batcher plants in Central Ohio.



MUSTANGS PAY OFF!

White Mustang Engines went into action for W. E. Anderson Co. on 24-hour stockpiling operation handling 22,000 lb. loads. Wonderful power reserve, low maintenance cost, and an extra mile-per-gallon of gasoline.



RUGGED WHITE DUMP TRUCKS... busy White concrete mixers... stockpiling White tandem dump trailers... all give W. E. Anderson Company, Columbus, Ohio, the real lowdown on White performance and economy. And 25 years with Whites in their fleet confirm their report.

"Whites pay off in these three ways:" President R. H. Anderson says.

"LONGER LIFE—we roll up the miles in our fleet and Whites consistently keep our maintenance costs low.

"MORE PAYLOAD—we're going to larger payloads constantly and Whites have the design and the power to do it efficiently.

"DRIVERS PREFER WHITES—take pride in their trucks and take better care of them because they know Whites stand up on tight schedules, heavy loads and hard trips. They help our safety program."

Find out how Whites can help your business. See your White Representative for facts.

THE WHITE MOTOR COMPANY

Cleveland 1, Ohio

For more than 50 years the greatest name in trucks



WIRE ROPE, too, resists attack with the RIGHT KIND of muscle

Brawny chest and shoulder muscles make the gorilla a formidable foe in the eternal warfare of the jungle. Defending himself and his family, this 450-pound heavyweight stands erect and fights back with sledgehammer blows of his mighty forearms.

In wire rope, too, it takes the right kind of muscle to resist constant attack of abrasion, corrosion, bending fatigue, load strain and shock stress.

Complete quality control of Wickwire Rope means that you can always count on the right grade of steel and size of wire; the right construction and lay of the rope for best results on your particular job.

See your Wickwire Rope distributor or contact our nearest sales office.



A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE THE COLORADO FUEL AND IRON CORPORATION — Abileno (Tex.) = Denver = Nouston = Odessa (Tex.) = Phoenix = Sait take City = Tutsa

THE CALIFORNIA WIRE CLOTH CORPORATION — Los Angeles = Oakland = Portland = San Francisco = Seettle = Spokane

WICKWIRE SPENCER STEEL DIVISION — Boston = Buffalo = Chattanoogn = Chicago = Detroit = Emlanton (Fa.) = New York = Philadelphia

WICKWIRE ROPE



PRODUCT OF WICKWIRE SPENCER STEEL DIVISION THE COLORADO POEL AND INDU COLPORATION



THIS IS THE DIESEL

for any job from 32 H.P. up

General Motors builds Diesel engines that do jobs no Diesel ever did before. We've made them sturdy, more powerful, more compact. And along with that, we've given them all the things you want in a work engine.

The GM Diesel starts quickly on Diesel fuel. It delivers a smooth, steady flow of power. It gets more work done in less time because it is faster-accelerating—reacts to varying loads with a snap and responsiveness other engines of its size can't match.

This power-packed 2-cycle Diesel fits in about the same space as gasoline engines of comparable horsepower—and provides fuel and maintenance savings of $40^{4}e^{4}$ to $70^{4}e^{4}$.

You'll find this versatile Diesel available in more than 750 different kinds of equipment built by over 150 manufacturers. Write us or see your GM Diesel distributor for the complete list.

DETROIT DIESEL

ENGINE DIVISION

GENERAL MOTORS . DETROIT 28, MICHIGAN

Single Engines . . . 32 to 275 H.P. Multiple Units . . Up to 800 H.P.





LeTourneau pictures of the month . . .



MINES IRON AT 30° BELOW — 215 miles north of the Arctic Circle at Kirkenes, Norway, 2 C Tournadozers work 24 hours a day, 365 days per year. Their task, vital to the Norwagian defense effort, includes shovel clean-up and haul road maintenance in one of the largest open magnetite pits in Scandinavia. Some 2,300,000 tons of ore are being removed annually.

The pit is close to 350 ft deep. Despite the grades, subzero arctic weather and abrasive material, Tournadozer efficiency has been very high. Rig's tires have required no repair. Greasing, needed only once every 10 shifts, can be done in about 15 minutes. Overall maintenance requirements are low. Equipment owner is Sydvaranger A/S of Oslo, one of the best known contracting firms in Europe.



CLEARS ROADS AT 90° ABOVE — Near Viota, Colombia, 250 miles from the equator, this Tournadozer helps maintain mountain roads. The job shown — clearing a landslide from a main highway — attracted an important audience. At least the operator dressed up for them. The fancy duds didn't keep him from doing a bang-up job, though! To reach the

landslide, he drove his Tournadozer 103 miles through traffic in 7½ hrs. Clearing 4,000 yds of rock, so that traffic could move, took only 13 hours. According to local officials, Tournadozer had saved many hours of delay by its fast drive in. Working at an altitude of 9,850 ft, it also cleared the slide more quickly than would have been possible with any other method.

Continued on next right-hand page . . .

McKIERNAN-TERRY PILE HAMMERS

help keep
Florida bridge
project ahead
of schedule

The Diamond Construction Co. of Washington, D. C., contractor for the new Gilmore St. Bridge over the St. Johns River at Jacksonville, Fla., had to sink pre-assembled frames and then drive piling to form cofferdams for pier foundations in 63 feet of water. Powerful McKiernan-Terry equipment helped keep this job ahead of schedule.

All H-beam bearing piles in this structure were driven with a McKiernan-Terry Double-Acting 11-B-3 steam hammer. For driving the steel sheet piling the contractor switched to a McKiernan-Terry Double-Acting 10-B-3 hammer, then used a McKiernan-Terry Double-Acting E-4 Extractor to pull the sheet piling.

This teamwork is typical of the way McKiernan-Terry equipment has helped to speed many thousands of construction jobs. There are 16 sizes of McKiernan-Terry hammers and 2 sizes of McKiernan-Terry extractors for every specific need. Write for bulletin describing complete line.

A McKiernan-Terry Pile Hammer punches down piling to form cofferdams for new Florida bridge, which will be another link in U. S. Highway 1. The bridge is located at Gilmore St. over the St. Johns River at Jacksonville, Fla. The designers are Reynolds, Smith and Hills of Jacksonville, Fla. C. t. Lash is Resident Engineer. B. E. Crumrine is Job Supt. for Diamond Construction Co.





OTHER McKIERNAN-TERRY PRODUCTS





GRAB BUCKETS



HONING UP TO
42-IN. I.D. X 55-FT. LONG
Typical of the extensive faclities of Ackiernan-Terry
for unusual jobs.



MEAD-MORRISON COAL AND ORE UNLOATERS AND BRIDGES Available in a variety of designs and in capacities of 300 to 1300 tens per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable end speedy operation. GRAB BUCKETS
Range of types and size
take bulk materials loads u
to 25 tons. Ruggedness with

McKIERNAN-TERRY CORPORATION • MANUFACTURING ENGINEERS • 14 PARK ROW, NEW YORK 38, N. Y.

Plants: Harrison, N. J. and Dover, N. J.

MK 324

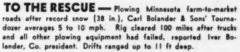
LeTourneau pictures of the month (cont'd.) . . .



DRIVES 140 MI. 81/2 HRS. — No trailer delays or truck-hauling expense for this dozer. Dixon Construction Co., Albany, Wis, drives it anywhere under its own power. Unit made one recent 140-mile trip through traffic in 81/2 hours (average, 17 mph). "It's the only heavy-duty dozer I know of that does not damage concrete," says Owner Dixon.



5 JOBS DAILY — "Tournadozer does the work of 2 crawlers," reports Plant Supt of an Arkansas bauxite mine. Speedy rig cleans around two 2½-yd shovels . . . dozes ore into 8 grizzlies . . . maintains rock stockpile. Rig also pulls "gyp" wagon to dump . . . spreads weste material — does all jobs in a 12-br shift.





FAST PUSHER — Vinnell Co. drove this Tournadozer 169 miles in 11 hrs from Sacramento to 10,000,000-yd Delta Mendota Canal at Firebaugh, Calif. Here, Tournadozer push-loaded 3 crawler-drawn scrapers. Complete push cycle averaged 70 seconds — including 15 seconds to back-up and spot . . . 45 seconds and 110 ft to load 17 pay yds of wet clay.



30-TON LOAD — Contractor David M. Deans gave 20,000 spectators a real show at a USDA farm reclamation project near Adams, Mass. His Tournadozer quickly rolled several rocks like this 30-ton monster off the field and into a gully.

Continued on next right-hand page . . .



Now, over 80,000 miles between overhauls



• An aggressive policy of stopping trouble before it develops into a serious problem has well rewarded Northwestern Transit Inc., of Michigan City, Indiana.

Six years ago, officials of this fleet discussed lubrication troubles with a Standard Automotive Engineer. As a result, they switched their entire fleet to STANOLUBE HD, Standard's original heavy-duty motor oil. Bearing troubles and ring sticking previously experienced with a conventional lubricant were eliminated. Valve life was extended.

When Standard's new and better STANOLUBE HD-M Motor Oil was introduced recently, Northwestern Transit readily adopted it for use. In the face of increasingly severe service, STANOLUBE HD-M through its better detergent-dispersant action has provided greater engine

cleanliness and has further extended valve life. The 68 units in this fleet now average from 80,000 to 100,000 miles between valve jobs. Operating costs, not including depreciation or tires, have been reduced to the impressive low average of six cents per mile.

The experience of Northwestern Transit indicates the benefits you can obtain by using new and better STAN-OLUBE HD-M Motor Oil. A Standard Oil Automotive Engineer will be glad to help you. Phone your local Standard Oil (Indiana) office. Or write: Standard Oil Company, 910 South Michigan Ave., Chicago 80, Ill.

STANDARD OIL COMPANY



(Indiana)

LeTourneau pictures of the month (cont'd.) . . .





LICKS SUGAR SAND — Replacing washed-out backfill on 24 miles of seawall near Biloxi, Miss, Tournadozer's hightraction tires keep rig rolling over soft ocean sand. Tires have needed no repairs; tracks on crawlers would have required constant attention. Reports the Engineer-in-charge, "I can hardly believe this is sugar sand after seeing Tournadozer perform." DOZES WET CLAY — Almost 1,000,000 yds were filled into Lake Michigan near Milwaukee recently to build a 980 x 900-ft coal dock. "Tournedozer handled output of 7 scrapers," reports Operator L. Derk. "One day, when rigs were on 600-ft haul, I dozed 6,390 yds into the lake. Also helped crawlers through the spread. Even had time to travel uphill to clean the cut."



CLEARS ROCK — Travelers from Mexico City to Acapulco soon will travel the path blaxed by 6 Tournadozers. Clearing the way for a new super-highway, these rigs are removing rock and smoothing the grade for 13 LeTourneau Scrapers which will handle most of the final 5,500,000-yd excavation.



COMPACTS COAL — Public Service Electric & Gas Co., Camden, NJ, hauls 208 tons of coal hourly from conveyor to stockpile with Tournadozer-Carryell team. On 760-ft cycles, "C" delivers 16 tons every 4½ min. Rig's big tires effectively compact, seal coal against spontaneous combustion.

70: R.	G. LeTO	URNEAU,	INC.
	Peoria,	Illinois	

We'd like to find out more about this 186 hp "tractor on rubber tires." Send information on

production prices delivery to:

NAME

t t

TITLE

COMPANY

CITY, STATE

Type of work to be handled

Tournadozer, Carryall - Trademark Reg. U. S. Pat. Off. G-284-G

The second look tells you more!

One look tells you that an International sixwheeler is big and rugged.

A second look, a look at any owner's cost records, tells you far more. It shows you how amazingly low upkeep costs have helped keep International first in heavy-duty truck sales for 20 straight years.

There's a reason for this record. Long years of low operating costs are engineered into every International Truck. All this can be yours in an easy-riding truck that's easy to handle, too.

There's no need to settle for second best when you can have the leader. See your nearest International dealer or branch now.

INTERNATIONAL HARVESTER COMPANY . CHICAGO

Check this list of International exclusives:

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- The "roomiest, most comfortable cab on the road"— the Comfo-Vision Cab. One-piece Sweepsight windshield. New green-tinted, non-glare glass available.
- Super-steering system—more positive control. Wider front axles make possible full 37° turning angle for greater maneuverability.
- 115 basic models . . . everything from ½-ton pickups to 70,000 GVW ratings.
- Traditional truck toughness that has kept International first in heavy-duty truck sales for 20 straight years.
- America's largest exclusive truck service organization.

H

International Harvester Builds McCormick Farm Equipment and Farmall Tractors . . . Motor Trucks . . . Industrial Power . . . Refrigerators and Freezers

Better roads mean a better America

INTERNATIONAL

TRUCKS
"Standard of the Highway"

International LF-190 Six Wheel series available in GVW ratings 22,000 to 45,000.

Diesels up to 70,000 lb. GVW ratings.



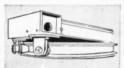
Battling Lake Michigan storms...

LINK-BELT SPEEDER

THOR E. BROTEN, Evanston, III., handles pile driving and clamshell work on marine construction and bridge building contracts with this Link-Belt Speeder LS-85. Photo shows it working on submerged mat handling a 1-ton hammer and

900-lb. leads. Operator Wayne M. Dayton, a veteran of 20 years, reports, "The LS-85 is fast, safe, accurate, and positive, I like its independent boom hoist fine, and it handles loads at radii impossible with some larger rigs."

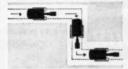
These Link-Belt Speeder PLUS FEATURES speed work, increase service



Hook Rollers — Cone-shaped for true rolling. Reduce roller and roller path loads—eliminate center pin pull.



Independent Boom Hoist—controlled power down as well as up. Safer, faster. Boom, hoist, swing simultaneously or independently.



Turns on a Dime. Either track can drive or be locked independently. Digging lock controlled from cab



Aff-Welded Lower—extra strength without extra weight. Resists impact and twist. Field service simple, fast.

LINK-BELT SPEEDER

CORPORATION

Builders of the most complete line of shovels, cranes and draglines
CEDAR RAPIDS, IOWA

PREUMITTACTOR
DEMONSTRATION WILL PROVE

IT CAN

PUSH

front end loader with bucket (illustrated), or angle dozer blade, rotary sweeper, snow plows, etc.

PULL

anything a wheel tractor will and also with front or rear winch.

POWER

any hydraulically, mechanically and pneumatically operated equipment such as back hoe (illustrated), post hole digger, scaffold boom, etc.

PROVIDE AIR

for any pneumatic tools that can be operated from a 105 C.F.M, AIR COMPRESSOR.



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The Compressor People · WEST CHESTER · PENNSYLVANIA

A phone call (West Chester 2500) or letter to Schramm Inc., West Chester, Pa., will arrange a demonstration or provide animated colored sound film. SCHRAMM AIR COMPRESSORS



Vapor rises as temperatures range between freezing and zero

LESS OVERTIME with LEHIGH EARLY STRENGTH CEMENT

Though overtime often saves money for the contractor and ups the earnings of workers, it doesn't always pay off. Excessive overtime results in worker fatigue, reduced efficiency, slowed down production. Here's a case in point:

In the construction of the new Allentown plant of Willard Storage Battery Company, the concrete floors were being poured at below freezing temperatures. Cement finishers had to put in long hours of overtime. Progress soon slowed down.

Then the contractor changed to Lehigh Early Strength Cement for earlier hardening, much less bleeding. Result: Finishing got off to an earlier start . . . and men were off the job by 6:00 P.M.

Try Lehigh Early Strength Cement on your next winter job. It will help you speed operations, cut down overtime and curing costs.

LEHIGH PORTLAND CEMENT COMPANY
ALLENTOWN, PA. . CHICAGO, ILL. . SPOKANE, WASH.



New Allentown, Pa., plant of Willard Storage Battery Company.

Owner: WILLARD STORAGE BATTERY CO.

Cleveland, Ohi

E. C. MACHIN, INC.

Allentown, Po

Architect:

H. F. EVERETT & ASSOCIATES Allentown, Po

Ready Mixed Concrete:

Allentown, Pa



LEHIGH PORTLAND CEMENT . LEHIGH EARLY STRENGTH CEMENT . LEHIGH AIR-ENTRAINING CEMENTS . LEHIGH MORTAR CEMENT



The form tie used for water tight walls must, of course, be leak proof. The type of tie which is truly leak proof is determined by the anticipated height of head, and the resultant pressure.

Superior Snap Ties, and standard and Cone-fast Coil Ties, give satisfactory results for low heads, but for high heads, the use of Superior Water Seal Ties provide a real and justifiable insurance against leakage.

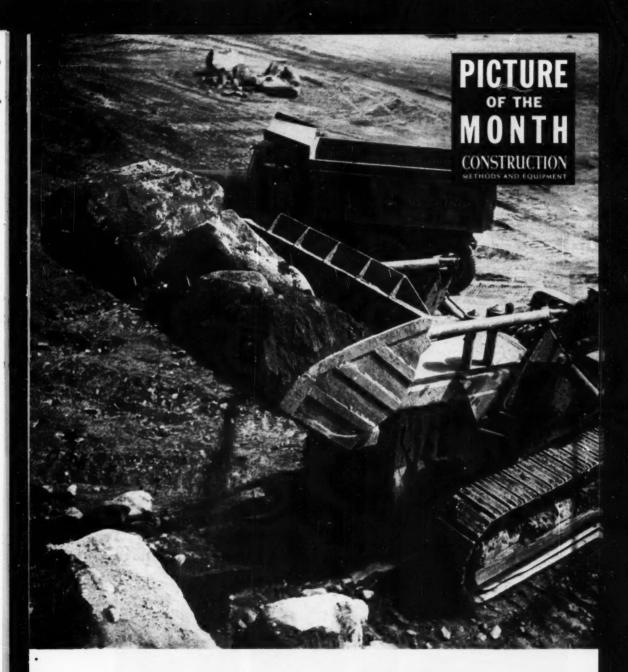
Superior Water Seal Snap Ties, and Coil Ties, both stand-

ard and Cone-fast, are provided with a water stop in the form of a securely fixed washer near the middle of the tie as illustrated. This washer effectively breaks the continuity of the rods, preventing seepage along the tie.

On any forming job, use SUPERIOR Concrete Accessories and be assured of the best in material, design and workmanship . . . plus the services of our experienced engineers who are always available to help plan your form work

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Big Bite Coming Up

EXCAVATING AND GRADING atop the Pocono Mountains of eastern Pennsylvania is a bone-shaking experience for operators and earthmoving equipment takes a beating. Boulders, accompanied by a pinch of dirt, are common fare for the scrapers and shovels on this job being done by Rochez Brothers, Inc., Pittsburgh contractors. But scrapers and shovels are not designed to take out big, loose rocks. So this Allis-Chalmers HD-20 and its rugged Tracto-Shovel pick out the big boulders and load them into trucks, in addition to cleaning up for the big power shovels along the bank face. The area being levelled is the site for the U.S. Signal Corps General Depot at Tobyhanna, Pa.

Construction News in Pictures



MAN-MADE CRATER—This huge concrete bowl, 42 ft deep and 179 ft in dia, is the foundation for an atomic power plant facility near Schenectady, N. Y., for the Navy. On it will rest a 225-ft steel sphere to house a nuclear engine for submarines. The project will be operated by General Electric Co. for the AEC. A 424-ft central tower and detrick are being erected to assemble the

sphere. Concrete footings around the periphery will carry steel columns to help support the building. Welded steel plates will make up the skin of the ball, with installation beginning at center of sphere. Steel work is by the Chicago Bridge & Iron Co.; foundation contractor was Ardini and Pfau, Inc., Syracuse; excavating was by Elmhurst Contracting Co., Inc., Corona, N. Y.



TO ROOF A RESERVOIR — An 8-in. slab of concrete was poured over these forms inside a Pasadena, Calif., reservoir, supported by Patent Scaffolding Trouble Saver sectional scaffolding frames. The 144x70-ft slab required 738 frames, 6 ft 6 in. high and spaced 5 ft apart. They were set into steel base plates and 20-in. adjustable legs made exact positioning possible. After pouring, a 3-in. blanket of dirt was spread on the slab to aid curing; later, another 21 in. of ground was applied.



STUMP SPLITTER — Contractor Bob Scalzo, Seattle, explains 4-ft point to a friend. Tool, fitted to a Bucyrus-Erie dozer on a TD-24 tractor, was fashioned from 6x4-in, armor plate bar. Driven as wedge, it splits and uproots stumps up to 8 ft across.

ANNOUNCING A new Dodge truck parade of power!





NEW! More powerful engines! A parade of power! See the new

Dodge "Job-Rated" trucks at your Dodge dealer's today. A total of 7 big, rarin'-to-go engines, including 3 brand-new power plants with high compression ratios and higher horsepower, greater cooling capacity, increased displacement, twin carburetion available on larger models. Plus famous features like 4-ring pistons with chrome-plated top ring, exhaust valve seat inserts.

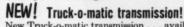
In addition, the new Dodge trucks offer outstanding new brakes, new no-shift transmission, and over 50 other new features. See your Dodge dealer for the biggest truck buy on record!

For a truck, ½-ton through 4-ton that fits the job, see the NEW...



NEW! Extra-powerful brakes!

Stop easily on steep grades, fully loaded. Supersafe brakes give silky-smooth braking, reduced driver fatigue, greater load protection... new increased stopping ability on 1- through 2½-ton trucks! *PLUS* Dodge's oversize braking surface with Cyclebond linings.



New Truck-o-matic transmission . . . available on ½- and ¾-ton models of Dodge "Job-Rated" trucks . . . saves shifting, cuts driver fatigue, lets you rock out of snow, mud, sand. Only Dodge offers shift-free Truck-o-matic! PLUS famous gýrol Fluid Drive, to lengthen truck life, protect your load.



NEW! Over 50 features!

50 ways new! Reinforced cab construction, improved exhaust system, extra-capacity radiators. Tinted glass, heaters with stepped-up heat output available. PLUS moistureproof ignition, high-torque capacity starting motors, and other dependability features. See your Dodge dealer.



Now on display at Your Dodge Dealers!

Construction methods . . . have been "jacked up" to amazing heights of speed and proficiency since the days of these 18th century stone



In recent years, construction men have developed the valuable technique of producing aggregate on the job. Traylor has applied 50 years of experience in the rock crushing field to meet this new crushing requirement. Today, Traylor equipment has earned a world-wide reputation for producing a more uniform, cubical aggregate that meets the most rigid engineering specifications. It takes experience to solve the aggregate problems of the construction industry. Traylor has experience . . . half a century of it.

The Traylor Ty Reduction Crusher combines rugged construction with simple design to give maximum efficiency and easy maintenance. Bulletin 8112 gives specifications and OUR
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leads to greater profits



CONSTRUCTION 'ROUND THE WORLD



HAND AND POWER EXCAVATING—East meets West as East Africans grub away by hand on several levels of a bank while U. S.-built power shovel works on grade in the Port of Mombasa on the coast of Kenya on the Indian Ocean. Millions of yards of earth are being removed from a hillside bordering deep-water shipping berths to increase capacity of this major port

handling a major part of the area's incoming and outgoing traffic. At this spot new railway marshalling yards will be constructed to move the freight. Much of the expension is to handle urgently needed capital equipment for big development projects set up for Kenya, Uganda and Tanganyika. Tank cars, freighters and revolver cranes indicate a busy port.—Eastern Publishers Service photo



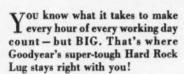
STEEL HEADFRAME over a mine-shaft in the Orange Free State in South Africa was erected in 33 days by Alpheus Williams and Dowse, a leading engineering firm. The structure is 150 ft high. Chief piece of equipment used was an electrically operated, 3-ton Scotch Derrick Crane with a 120-ft boom and mounted on 60-ft towers. A P&H truck crane assisted from the ground.



SQUEEZE PLAY—Caterpillar DW20 tractor and W20 wagon inch through a railway underpass 130 mi out of Calcutta, India. Sixteen of these units made an epic 600-mi trek to Hirakud Dam in the State of Orissa on the Mahanada River. Half the distance was over good highways, but after that the big 22-ton earthmovers had to go cross-country, ford streams and have bridges built at times.

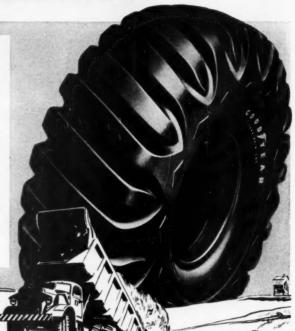
MONEY SAVER

on rock-ridden jobs



It stands the gaff because that's what Goodyear builds it for! Its massive lug-bars shrug off bruising rocks, resist tire-killing snags. It gives you full-pull on the toughest terrain that ever jinxed a job!

So why let troublesome tires eat up your profits? That rugged muscleman—the Hard Rock Lug, by Goodyear—is job-insurance!





ALL-WEATHER

- finest for flotation, rollin

SURE-GRIP

in name and action! Drivewheel traction champ for graders and scrapers.



HARD ROCK LUG

- super-tough champ for all kinds of rock work.

FOR EACH UOB, THERE'S A COST-CUTTING GOODYEAR TIRE!

All-Weather, Sure-Grip-T.M.'s

GOODFYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND

We shink you'll like "THE GREATEST STORY EVER TOLD"- Every Sunday - ABC Network

Construction Moves Ahead

AS WE APPROACH the end of another year, it is well to pause for a moment and reflect upon our deeds and accomplishments, and to measure our progress in the light of future possibilities. All in all, construction has done well this year, and has given a good account of itself. Not only has the industry turned in a record 32 billion dollars in new work, but it also has advanced the technique of construction. And that's important, for without progress an industry withers and dies.

The big volume of work this year was accomplished despite many handicaps—the steel strike, allocation and shortage of materials, curtailment of certain types of projects, serious labor troubles in certain areas, and lack of many equipment items. The stamina of the industry, its ability to overcome all odds, and its refusal to be licked carried construction through to new triumphs in achievement.

Technically, construction made steady progress. Precasting, prestressing, tiltup and lift-slab methods of concrete placement made great strides, foretelling great advances to come. Floating sections of Pier 57 into place at New York paved the way for a new type of semi-floating piers for a long bridge to be built across the Hudson for the New York Thruway. Also faster cableway operation at Pine Flat Dam overcomes long objections to former slow speeds in this economical material-handling system. Tunneling reached new heights at Downsville, with extensive roof bolting, at Niagara Falls with unusual methods and equipment on 51-ft bores, at Kemano where world records were smashed in inaccessible mountain wilderness and where a vast chamber is being sliced out of solid rock for an underground powerhouse.

That whole Kemano project is a spectacular picture of construction progress. Nothing stops the construction advance up there—isolation, rugged terrain, difficult access, foul weather—all are taken in stride with modern construction aids such as helicopters, float

planes, aerial tramways and good old dependable construction equipment put to trials far beyond its intended use or rated capability.

The building end of the industry has come through in grand style, especially in industrial defense areas, where streamlined, assembly-line and massproduction methods have replaced many an orthodox, stodgy way of building.

Equipment manufacturers have come forth with new machines, and improved models for better and faster construction. These fellows have really been strapped, too, with material shortages. They have realigned their forces through mergers and consolidations to better serve construction—and construction will never move faster than its machinery component.

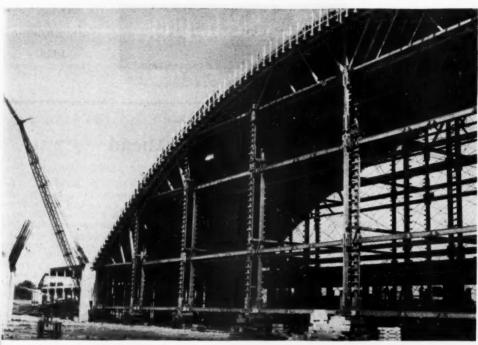
By and large, labor has cooperated to make construction a success this year, obviously so, else we could never have racked up a record volume of work. Unfortunately there have been numerous crippling strikes, especially on the large atomic energy projects where the huge influx of workers went to the heads of local small-time labor leaders. But top labor leaders are just as anxious as top construction men to work out satisfactory and efficient labor handling procedure. With new leadership coming up in both great labor movements, and with their expressed desire to cooperate with each other and with management, and with a new attitude shaping up in Washington, perhaps we are on the way to new concepts in construction labor relations.

Yes, construction has made progress this year. It is proud of its achievements. But in the tradition of the industry, it is not interested in finished structures, in what it has done, but it is looking forward to even greater achievements next year and forever after. America is safe so long as it has a virile, intelligent and aggressive construction industry.

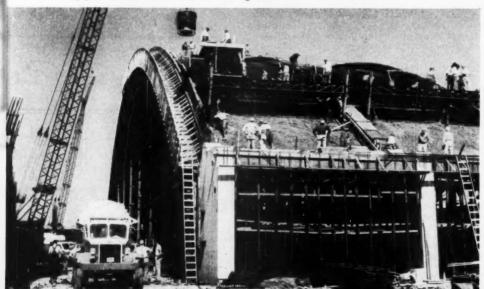
Rich

Peace on Earth, Good Will To All Men

TOM AND DAVE, those cute little chaps on our front cover, express our Christmas Message to you this year. Engrossed in the thrill of playing with toys on Christmas morn, they represent all that a troubled world yearns for-peace, quiet, happiness, freedom from want and fear, with no hatred or prejudice or jealousy in their hearts. To them Korea is just something big folks talk about, war and defense and preparation against enemies are unknown, high prices and high taxes are just something daddy complains about. Every parent in this land and in all lands join Mr. and Mrs. Roy McCluskey in hoping and praying that Dave and Tom grow up into a world of peace and human happiness. We in construction hope that their longing for construction toys develops into a burning desire to use and direct real construction equipment, for of such desires are top-notch construction men made. As we pause to celebrate Christmas Day, let us all remember that only by following the principles and teachings of Him whose birth we honor that day can the world ever come to its senses and can man ever live in the Peace we all wish for Tom and Dave as they grow up. Merry Christmas to each and every one of you!

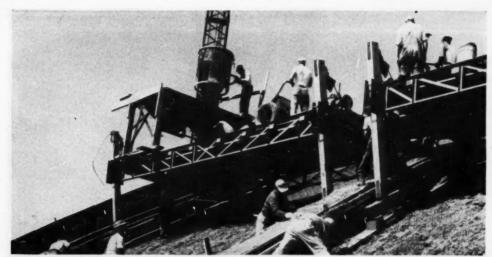


Clean-looking prefabricated arch centering and . . .



Moving platforms for pouring and finishing are . . .

Refinements in Thin-Shell Concreting

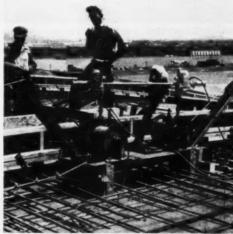


LEVELING OF CONCRETING PLATFORM, which moves up arch roof with the pour, is handled by winches at rear legs. They suspend

platform from top of legs, which are hinge-pinned at bottom and are free to slide and rotate through fixtures at platform deck.



TRACK FOR PLATFORM is series of 2x12-in. planks whose legs fit between reinforcing and rest on form. They are leapfrogged ahead as pour advances up roof. Note bridging between platforms.



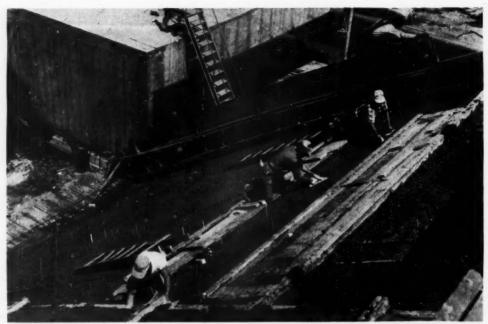
POWER FOR PLATFORM is supplied by winch units mounted at arch crown and run by electric hand wrenches. They pull platforms up roof slope by two-part lines to snatch blocks on platforms.

CHICAGO'S W. E. O'Neil Construction Co. made a couple of smart moves on its just-completed job of building twin concrete hangars at local Midway Airport for Trans World Airlines. The traveling timber arch form for the long-span thin-shell roof was braced by steel rods and cables, making it far less massive than the all-wood ones used on previous similar jobs. And concrete was distributed from runways that moved up the arch barrel

as the pour progressed. Drawn by winch and cable, these assemblies dragged all necessary screeds and finishers' platforms behind them. TWA's two new hangars are identical, and share a central buttress. Each has a roof span of 270 ft, rises to 65 ft at the high point, and is 125 ft deep along the longitudinal axis. Roof shell thickness reduces from 6 in. at the edges to 3½ in. at the crown. Arch ribs, five per hangar, are on about 31-ft centers

and vary in depth from 54 to 38 in. They extend a maximum of 16½ in. below the arch barrel.

The entire roof of each hangar—shell and ribs—was concreted in two pours each covering two bays. For this, O'Neil had Seattle's Timber Structures Inc. prefabricate a two-bay traveling form measuring 62x270 ft in plan. It was shipped from the West Coast to Chicago where the timber framework was erected and bolted and tied with



CONCRETE IS SCREEDED AND FINISHED from trailing platforms pulled by concreting platform. They ride on wood strips (barely visible on near side) nailed to blocking on the form. Blocks give

correct shell thickness, which varies from 6 in. at buttress to 31/2 in. at crown. At rear is reinforced concrete lean-to that will provide 30,000 sq ft of office space for twin hangers.

rods and cables. The top chords, cut to arch curve, carried longitudinal purlins topped with plywood.

The form assembly moved on nine rails on the hangar floor. Screw jacks raised it into position where it was cribbed up for each pour. Because the roof ribs extended below the arch barrel across its entire width, the cribbing had to be nearly 6 ft high. This gave

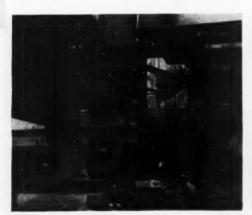
sufficient room, after de-centering, for the form to clear the outboard portions of the ribs so the assembly could be rolled to the next pour.

When the first hangar was completed, the form was moved outside. Then it was jacked up and its 45 wheels rotated 90 deg for travel to the second hangar alongside. Another jacking and wheel switch put the assembly in posi-

tion to be rolled ahead for the two remaining pours.

Motive power for moving the form was provided by lines from one crane and from a series of small winches operated by electric hand wrenches. The form was moved from one pour to the next in a minimum of 2 hr, and from one hangar to the other in one-half a day.

Each of the four two-bay arch



FORM IS LOWERED by screw jacks after pour, until it rests again on rails. It was de-centered I in. at a time for even loading.



FORM IS PULLED by winches to position it for next pour. These are same units that pulled concreting platforms up arch barrel.



FORM IS CRIBBED nearly 6 ft above hangar deck for making pour, so it will clear arch ribs upon de-centering and can be moved ahead. Structure was prefabricated on West Coast and shipped to Chicago for erection and use. Its 45 wheels ride on nine rails.



FORM IS TIED with band iron between joists and top chord. This is at roof rib, which extends both above and below the arch barrel.

pours called for 400 yd of concrete. This was a 3,750-psi mix, with a 2-in. slump and a water-cement ratio of 51/2 gal per sack. Mixed in transit, it was discharged into 3/4and 11/4-yd buckets and hoisted by crane to hoppers on concreting platforms that rode up the form. Buggies carried concrete along the platforms from the hoppers to the point of placement. The two bays

were poured simultaneously, with concreting proceeding evenly up both sides to the crown.

The concreting platforms were fitted with wide, roller-like wheels that moved along plank runners whose legs rested on the arch form. The four platforms (one on either half of each of the two bays being poured) were pulled up the arch slope by four double winch units

set on the crown. Platform surface was kept level on the changing roof slope by simple hand-crab and cable suspensions from the rear legs, which extended above.

As each of the concreting platforms moved up the roof with the pour, it pulled a heavy screed and a finishing platform in tandem behind it. These were dragged along wood screeding strips blocked to



FORM IS REPAIRED and damaged rib form panels are replaced as affixed to first half of hanger's double center rib, and protective assembly moves ahead. At right, expansion joint material has been

paper is being pasted on to prepare for second pour.



FORM ADVANCE IS AIDED by railroad car movers at each rail, which nudge unit along to ease strain on winches. Cribbing timbers

have been loaded on to bottom chords of form for free ride to next location. Assembly is 62 ft long, 270 ft wide, 59 ft high.

give the correct shell thickness.

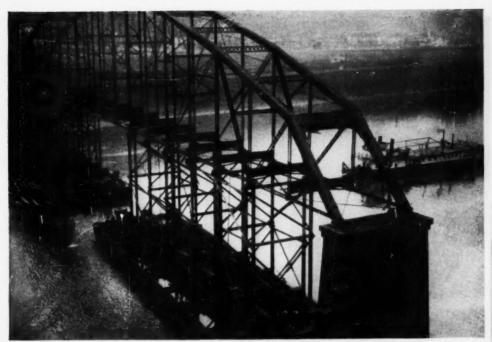
Pouring, vibrating and finishing a two-bay pour took less than a day. When the concrete had attained a minimum 2,500-psi strength, usually in 4 days, the form was de-centered. It was lowered 1 in. at a time to assure that no one portion of the shell assumed load before another section. After form removal, rib deflection at the crown was 2½ in. A curing compound was applied before placing glass fiber insulation and four-ply roofing that completed the shell.

Ammann & Whitney, New York and Milwaukee, were consulting engineers for TWA's new hangars. Owner's construction supervisor was C. C. Heysinger. Alex P. Zabore was in charge for the contractor, the W. E. O'Neil Construction Co., Chicago.



COMPLETED POUR IS READY for insulation and built-up roofing to be applied. After second similar pour, form will be moved into space in foreground for twin hangar's pours.

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being unwatered to float the 515-ft main span of the old Rankin

READY TO LIFT. Barges with falsowork bents are in place and bridge off its piers. When clear of piers, span was severed in the middle and each half floated away separately.

Bridge Floated to Shore for Dismantling

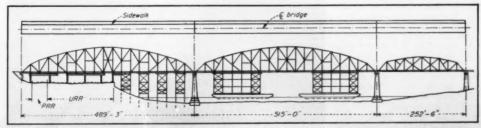
By J. M. SCOTT, Erecting Engineer, American Bridge Div., U. S. Steel Company

BRIDGE DISMANTLING can be as tricky as erection-especially in congested areas. Such was the case recently when the American Bridge Division of U. S. Steel dismantled and scrapped the old Rankin Bridge across the Monongahela River between Rankin and Whitaker, Pa., near Pittsburgh.

The old two-lane steel structure had outlived its usefulness and had been replaced by a new highway bridge 150 ft upstream. Approximately 100 ft downstream, hightension wires span the river, with the lower wires at an elevation below the top chord of the bridge. The approach spans on each side

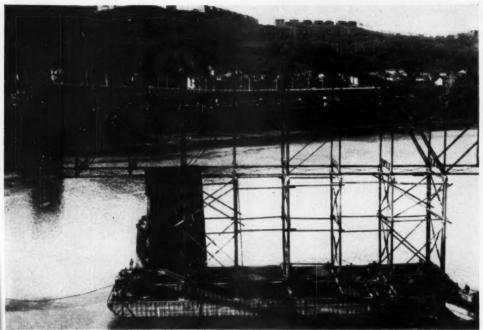
also crossed a number of railroad tracks which had to be kept clear for through trains and in-yard shifting.

The river portion of the bridge consisted of three pin-connected through trusses with spans of 489 ft 3 in., 515 ft and 252 ft 6 in. Trusses were spaced at 24 ft 6 in. c-c, and



VARYING TECHNIQUES were necessary in scrapping procedure. Sketch indicates how center span was lifted on barges to keep river

channel clear. Left shore span was supported on falsework over reilroad and water. Right span was collapsed to ground.



ON ITS WAY to shore for dismantling by derrick boat, one half of the 515-ft span balances neatly on two barges atop 50-ft false-

work bents. Barge units carried two large pumps for watering and unwatering and a three-drum winch to maneuver on the stream.

the chords of the 515-ft span were 70 ft c-c at the mid point. On the Rankin side there were about 1,000 ft of approaches and ramps consisting of trestles, tower bents, and two small truss spans over two railroads.

Dismantling required a different method for each span. The approaches on the Rankin side were close to the ground, light in weight and could be taken down with crawler cranes operating on the ground.

The 489-ft span on the Whitaker side crossed four main-line tracks of the Pennsylvania Railroad, 3 main - line and 14 yard tracks of the Union Railroad, and extended about 230 ft over the river. This span was supported on full falsework. The falsework was capable of carrying the dead load of the span plus the weight of a truck crane. Falsework over the railroad tracks was placed and removed with a locomotive crane operating on the tracks. Falsework in the river was placed and removed by derrick boat.

By using heavy beams cantilevered over wood and steel bents it was possible to provide support at each panel point and foul only



TRUCK CRANE does the lifting as sections are removed from 489-ft span, crossing part of the river and a busy railroad yard. The two halves of the long center span have been floated to opposite shores to clear the channel. New bridge appears on right.

3 of the railroad tracks. After all falsework was in place, truss diagonals were cut, transferring the dead load of the span from the piers to the falsework bents. Dismantling was done with a truck crane operating on the deck. Steel members were cut into handy pieces and loaded on trucks.

The 252-ft span was half over land and half over the river. There were no obstructions below, and it was possible to collapse this span and load it into barges with a der-

rick boat.

The 515-ft center span was the biggest project. It crossed the main channel of the busy Monongahela River and maintenance of river traffic was of prime importance. There was not sufficient water under the side spans to bypass river tows on either side of the channel span. This required a method that would leave open a restricted channel at all times, or would close the channel for a minimum length of time.

Drop or Float?

Dropping the span intact presented unknown factors as to the length of time required to clear a channel and pass traffic. It was decided that floating the span would clear the channel and permit traffic to pass in the shortest time.

Approximately 150 ft upstream was the new bridge. Approximately 100 ft downstream were the high-tension wires. These two obstructions made it impossible to turn the span, after it was floating, and move it to shore for dismantling. Moving the entire span to one shore would still leave more than half the span extending into the channel. It was decided to cut the span at the center and float each half to shore between the old piers and the new bridge.

It was necessary to construct two floating falsework units, one for each half truss, and center one unit under the center of gravity of each. Each unit consisted of two 1,000-ton coal barges lashed together at the quarter points. On each pair of barges were built six bents of falsework. The bents were approximately 50 ft high and constructed of 12x12 timbers. The trusses were 24 ft 6 in. c-c and the barges 52 ft wide over-all.

Bents were supported on heavy steel beams spanning between the barge gunwales. Camber blocking on the top of all bents was designed to provide for the dead-load camber in the span and to furnish a means of varying the height of the bents to cover fluctuation in the pool elevation of the river.

Each barge mounted two large pumps and a 3-drum hoisting engine. The pumps were used to water and unwater the barges. The hoisting engine provided power to move the barges into position prior to floating, hold them during the unwatering operation and then move them back to shore. Wire ropes attached to piers and anchors made it possible to move barges without outside help.

Preliminary work consisted of pumping water into the barges to lower them a predetermined distance for vertical clearance to float the falsework under the spans and to provide sufficient buoyancy to carry the weight of the spans after unwatering.

To determine the distance barges had to be sunk, it was necessary to determine the weight of each half-span, falsework, engines, pumps, and miscellaneous rigging. This amounted to 300 tons for each half-span. A weight of 300 tons required a draft of 3 ft 9 in. for each pair of barges. Knowing the draft, the height from the water to the span, plus 6 in. for clearance over the piers, and adding these together, the distance from the underside of the barges to the span was known, and the height of the falsework bents determined

For Force Changes

By pumping water into the barges equivalent to the weight of the bridge, the falsework bents were lowered until they were even with the span, and additional water added until the bents were approximately 4 in. below the span to permit the floating units to enter.

Temporary reinforcing of some members was necessary to support the big span on falsework. The bottom chords were composed of eyebars designed for tension only. They would be required to act in compression while the span was on falsework. Straps about 2x½ in. were welded to the tops of the bottom chord eyebars, tying them together to prevent buckling and enabling them to carry compression loads.

The top chords were compression members pinned at the joints, but with no provision to take tension. Temporary straps were welded to the top chord joints to tie them together sufficiently to take tension due to the falsework and the cantilevering of the end panels beyond the falsework bents. Other

members which would be required to carry stresses of opposite forces were reinforced similarly by welding additional temporary material.

River traffic was stopped for the floating operation. Cables from the hoisting engines were carried across the river by a tug and the barges moved into position under the span. The barges were secured to each other and to the piers. and wire rope guys connected between the bottom chord of the truss and the barges to aid in spotting and holding the barges in position. The pumps then started to unwater the barges. When all water had been removed from the barges, the span had raised clear of the piers and was supported on the falsework.

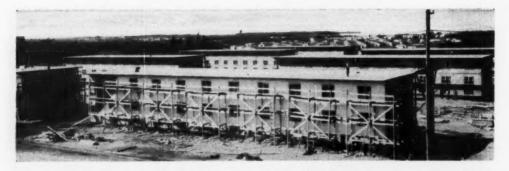
At this point the diagonals at the center of the span were cut, followed by the top chords, bottom chords and bottom chord bracing. Each half span then was moved to shore, the cables removed from the river and traffic permitted to move. The operation required 13½ hr from the time traffic was suspended until it was resumed. Each halfspan was dismantled along shore with a derrick boat.

The work was done under contract to Allegheny County. Field work for American Bridge was supervised by G. W. Hicks, superintendent of erection, and D. B. Reese, field engineer. The author was erecting engineer in charge of the work, under the supervision of John Lowery, manager of erection, and C. W. Doerr, vice-president of erection operations.

Laborers, Beware!

A LABORER fell 3 ft to the ground when a bolt broke while he was tightening bolts on column forms, sustained a chipped bone of the right heel. Another one suffered broken bones in the right leg when a motor truck wheel struck a small piling lying on the ground and caused it to swing around and strike the man. A third laborer received back injuries when he set down a loaded wheelbarrow on a ramp, lost his balance, and fell backward into a 4-ft ditch.

It was fatal to our fourth laborer when a chunk of clay weighing between 75 and 100 lb fell on his back and shoulders from a low height while he was bent over with his chest against a timber. A broken rib punctured a lung and he died in the hospital.





WOOD FRAME AND CONCRETE BUILDINGS are large part of phasis in next season's lettings. These wood civilian quarters (top) military's Alaskan construction program, will have continued emarca at Elmendorf; 200-man concrete barracks are at Fort Richardson.

ALASKA...

Land of Construction Opportunity

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By HENRY T. PEREZ Senior Associate Editor

WHAT ARE THE PROSPECTS for work in Alaska? What are the general conditions that a construction outfit can expect to find there? And what are the problems peculiar to that area which must be met and overcome to make a contracting yenture successful?

To find the answers to these questions, we took a quick swing through Alaska early last month with the cooperation of the Air Force and the U.S. Army's Corps of Engineers. Here's the picture, as we found it:

Construction prospects for the next couple of seasons, at the very least, are excellent. The Corps of Engineers alone has more than \$240 million available for obligation on 112 proposed projects to be put under contract in 1953. That's

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STEEL FRAME BUILDINGS, such as this central heating and CURTAIN WALLS on many Alaskan structures are of concrete power plant, also stand high on the Army's construction priority list. block made locally. Rate for blocklayers is \$4.07; for tenders, \$3.185.

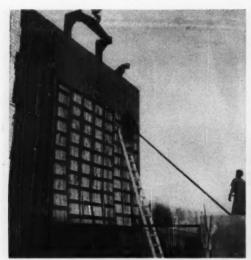
a big slug of work—far bigger than previous years. But it's only a part of a master plan that calls for more than \$1 billion in military construction. Less than 40% of the ultimate program is under contract at present.

The military, of course, is the biggest wheel in buying construction in Alaska. But there are other jobs, too. The Territory plans to spend \$20 million for highways and \$12 million for other public works in fiscal '53, and the Alaska Railroad hopes to have \$9 million available for construction contracts. Civil aviation interests are plugging hard for new airports and the expansion and improvement of older ones. And much housing, both public and private, is planned for Alaska's burgeoning popula-

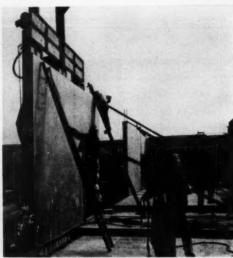
With the exception of work in the Aleutian chain, for which the contract-awarding agency is the Navy's Bureau of Yards & Docks, the Army Engineers handle all Alaskan construction projects for the armed services. Until 1947, the cost-plus-fixed-fee contract usually was used. Now, however, their



UNDERGROUND UTILITIES at military posts are extensive. These, at Anchorage, will be encased in insulating concrete. At Ladd and Eielson Air Force Bases near Fairbanks, where winter temperatures are more severe, they are run in 7-ft square concrete tunnels at a cost jobs are all let on a lump-sum of something like \$200 to \$300 per lin ft.



TILT-UP CONSTRUCTION, new to Alaske, posed problem when wall slabs were cast on wood forms which clung to embedded



furring strips (left) instead of remaining on ground. On next job (right) slabs were cast on floor, and strips later affixed by stud gun.

competitive bid basis. That's because conditions have changed considerably.

Construction-wise, most of the pioneering has been done, the Corps says, and there are far fewer unknowns. Labor has become more stable, transportation has improved and some of the variables (such as concrete supply and subsistence for the crews) have been stabilized. The standard government contract form is used, modified to provide for government

maintenance of government property records.

Usually, 30 to 45 days are allowed for preparation of bids. And the Engineers expect that all work for 1953 will be under contract by April 1. There will be some street and railroad work, airport paving and pipelines. But most of this program's \$240 million will go for building construction—warehouses, shops, living quarters and the like—and their attendant utilities.

Such things as barracks, ware-

houses, power plants and hospitals are generally of concrete frame construction with concrete block curtain walls, for protection against fire. Family and bachelor quarters are wood frame structures because of the price advantage. However, in all types of structures, finicky architectural refinements and embellishments have been eliminated to simplify construction and reduce costs to a minimum. The Army calls the designs "austere." Steam, water and sewer lines serv-



WINTER CONSTRUCTION is sometimes continued under protection of framed tarpaulins (top) or plywood enclosures (bottom)

in parts of Alaska where climate is not too severe. It is not the rule in those sections where temperature drops to as low as 76 below.

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sheaves so crane can swing slab vertical, where it is held by catch be cut out when handling smaller or irregular panels.

VACUUM LIFTER that handles wall panels is fitted with cable and hooks. Individual vacuum lines to compartmented face let sections

ing the buildings in the colder areas must be enclosed in "utilidors"-7-ft square underground corridors of reinforced concrete.

A great part of the work is concentrated near three spots along the Alaska Railroad (in the socalled "Rail Belt"): Whittier, the Army's new all-year port on the coast; Anchorage, 50 mi up the line, where Ft. Richardson and Elmendorf Air Force Base are located; and Fairbanks, 360 mi inland. In this last area alone, \$129 million will be spent for construction at Ladd and Eielson Air Force Bases in 1953.

Most of the work so far has been done by stateside contractors. In the first 10 months of this year. for example, they took \$48 of the \$521/2 million in contracts let by the Corps of Engineers. And the large amount of work programmed for letting in 1953 indicates that now there is even more opportunity for other stateside contractors to tackle work in Alaska. Local Alaskan firms generally are small, and to date seem to have had little inclination to combine in joint ventures to bid on the larger jobs.

Competition has been keen. On one \$13 million job, the spread on the first three bids was less than \$200,000. And contractors are bidding in greater numbers, too. This last season they averaged seven or eight per job, and have run as high as 18.

In the sections of Alaska where

most of the upcoming military work is concentrated, the construction season is short. April through October is the usual. But its brevity is compensated for, in part, by the excellent weather that generally prevails during that period. The climate is temperate and dry, and days are long. Because the season is short, the work-week is pretty much a 6-day affair, with shifts running 9 to 10 hr in the

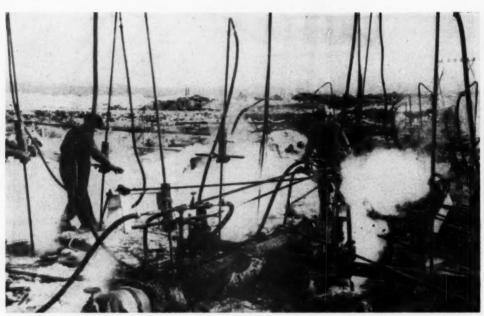
Winter operations are confined

largely to interior work on structures that have been closed in. And last winter, inside work proceeded on 60% of the projects. Some outside jobs have been pushed through sub-zero temperatures under the protection of tarpaulin tents heated with salamanders.

Labor is something of a problem: Rates and turnover are high; efficiency seems somewhat lower than in the states. It is highly unionized. Some unions have Alaska locals, other crafts are affiliated with



OUT-OF-SEASON WORK outdoors is extra-costly, but is sometimes necessary. More general is practice of working on interiors of structures that already have been closed in.



THAWING OF FROZEN GROUND or permafrost is often a problem, as the start of this power plant job would indicate. In all parts so rest of work can get under way with a bang in spring.

Seattle locals. The latter either have established Alaskan branch offices or else appoint job stewards to handle local administration.

Some typical current wage rates are: Bulldozer or scraper operator, \$3.42; oiler, \$3.07; shovel runner, \$3.77 to \$4.07; dump-truck driver, \$3.07 to \$3.52; laborer, \$2.935 to \$3.22; carpenter, \$3.34; plasterer and bricklayer, \$4.07; ironworker, \$3.615. All labor agreements expire this December 31st and negotiations are under way for next year's contracts.

The labor supply is becoming more stable as Alaska's population grows, but it is still necessary to depend on migrant or imported labor to man jobs fully. In the Fairbanks area, for example, only about 10% of the labor force comes from local sources. However, labor in considerable numbers migrates to Alaska for the construction season. With the exception of a few specialty crafts, local, plus migrant labor, usually is sufficient to handle the work until the end of June. Turnover is high, though: 100% in 3 months is not unusual.

From about July 1st on, it is necessary to import men from the states. One contractor quotes a cost of \$500 per man to fly this labor in from Seattle, including roundtrip passage and standby time. But that seems somewhat high.

Government housing and messing facilities, operated for the Corps of Engineers by a contract caterer, are available to construction forces in the Whittier, Anchorage and Fairbanks areas. The men themselves pay \$5.75 per day when they use these services. However, job specifications usually require that the construction contractor guarantee a certain minimum occupancy. The guarantee, in dollars, is currently fixed at 3% of the contract price. To date, from 50 to 80% of the men employed on any one job have chosen to live in these camps. In remote areas. the contractor himself must make board and lodging available at a cost to his men of not more than \$5.75 per day.

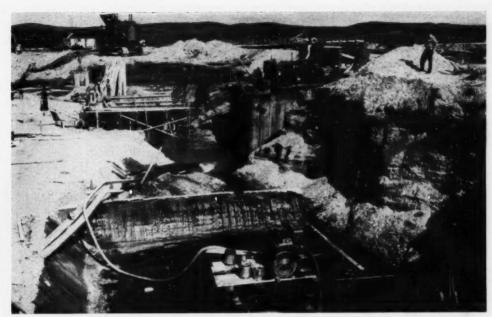
Transportation is a problem and costs are high. The port of Anchorage, ice-blocked 6 months of the year, has 31-ft tides. Ocean freight from the U.S. Pacific Coast comes in to Valdez or Seward the year round. Truck freight lines deliver from both ports, and the railroad from the latter, to Anchorage and Fairbanks. Typical unit rates from Seattle via Seward, exclusive of wharfage and handling at Seattle, plus tax: Lumber,

\$29 to Anchorage and \$37 to Fairbanks; plumbing supplies, \$57 and \$84; construction equipment \$53 and \$55.

Some rail freight rates from Anchorage to Fairbanks are: Lumber, \$39; building materials, \$34; vehicles, \$40. Truck freight between those points is \$41 per wt-ton. Rates over the Alcan Highway from Great Falls, Mont., to Anchorage and Fairbanks are \$181 and \$170 per ton. Almost all points in Alaska can be reached by air. Scheduled air cargo rate from Chicago to Fairbanks is \$460 per wt-ton; from Seattle, \$340.

Construction materials and equipment are available locally in Alaska, but most are limited in quantity. There are concrete block and pipe plants in Fairbanks and Anchorage, as well as ready-mix deliveries and equipment distributors. Commercial vendors have storage for 75,000-bbl of cement, both bulk and bag. Aggregate usually is available near all job sites.

The government normally furnishes ready-mix concrete to projects at Anchorage and Fairbanks. At one time, other government-owned construction materials, equipment and spare parts were available locally for the use of contractors on Corps of Engi-



DRAINING OF THAWED GROUND can also be tough, and can disrupt construction schedules if thawing has allowed groundwater

below a permetrost layer to be released. Here, in Fairbanks area, large battery of pumps sucks from sheetpile well to drain the hole.

neers projects in Alaska. These were left over from the CPFF contract days, however, and little is left now. The contractor on one current multi-million-dollar project, for example, was supplied with just two power hand saws and a small pump. Where any items are available, they are listed in the job specifications.

Construction costs in Alaska are high. Army Engineers say that in Anchorage and Fairbanks, respectively, they are 1.9 and 2.2 times the cost of an equivalent project in the states. And isolated jobs in remote areas may run 4 times the cost. However, the cost differential has dropped considerably in the last four years, and the trend continues downward.

In actual physical construction, an Alaskan project usually is not much different from a regular stateside job. One exception is in the Fairbanks area where permafrost is encountered. If this permanently frozen ground isof a good gravel type, it is generally of such consolidation that little uneven settlement will result upon thawing. If of a silty nature, it becomes mushy and must be removed and replaced with non-frost-susceptible material.

Because permafrost areas are

spotty in location and non-uniform in quality, the extent is first mapped with probes. Then necessary sections are thawed with steam jets. If the site material is good, it is consolidated. This has been accomplished successfully by blasting with light charges on 5-ft centers and at depths of 10, 15 and 20 ft. A less costly method of consolidation-dropping a 11/2ton headache ball from a height of 30 ft-is now being tried. In any event, final degree of compaction is checked by probes and test pits before building foundations are started. For runways and the like,

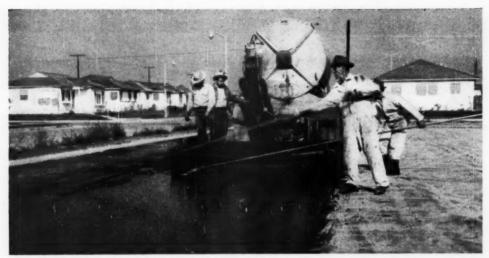
• Interested in bidding on any of the Army's \$240-million Alaskan construction program for 1953? Write (air mail) for "Prospectus of Construction" and ask to have your firm's name added to the list of those who receive "Notice to Prospective Bidders." Be sure to specify the type of work that interests you and address your letter to:

> Alaska District Engineer Office Anchorage, Alaska

Seattle Branch Office of Alaska District Engineer 300 Exchange Building Seattle, Wash. all frost-susceptible material is removed at least as deep as seasonal frost penetration.

If any one specific thing can be called the key to successful contracting in Alaska, it is to have the job well organized. High costs. short season and long supply lines put a big premium on good job management-on proper scheduling that can keep the project in high gear at all times. Obviously, one of the requisites for such uninterrupted construction is an adequate and firm supply of materials. And top-notch equipment is important also. It's poor economy to ship your crocks to Alaska where freight rates are high, spares are scarce, and delays can be deadly.

Col. Louis H. Foote, Alaska District Engineer, and Larry A. Moore, manager of the Alaska Branch of the Associated General Contractors of America, both in Anchorage, each emphasize these good management and good equipment requirements for success. Col. Foote adds that there's always room in Alaska for more stateside contractors, particularly with the \$240million construction program for 1953 just getting under way. The risks may be there, as on any job, but so are the profits for a wideawake contractor. Good hunting!



DRAG SPREADER BOX, charged and pulled by truck mixer, places bituminous paving in fast time without screed boards for Long Beach school play yard. Strips are 10 ft wide.

Drag Box Paves School Yard Quick and True

(Pictures and information from K. N. CUNDALL, American Bitumuls and Asphalt Co., San Francisco, Calif.)

A CRUDE BUT EFFICIENT homemade drag spreader box was the key to fast placing of 45,000 sq yd of 1-in. bituminous surfacing on the play yard of Samuel Gompers school at Long Beach, Calif. SullyMiller Contracting Co., Long Beach, found that use of the drag box eliminated screed boards, required the same number of men as did former handspread methods, but increased production threefold. The box was fed and pulled by agitator-type transit mixers.

The topping was placed over a sand-clay base that had been compacted to maximum density and (Continued on page 68)



CRUDE BUT EFFICIENT, drag box does good job of spreading very plastic topping mix received from truck mixer. Man with shovel in back corner is controlling flow of mix into joint between old and new strips.



AT END OF STRIP, drag box is lifted and turned by front-end shovel ready for laying a new strip on return run. Note extension of outer box edge at extreme right for trimming and sheping edge of strip, as spreader moves along.



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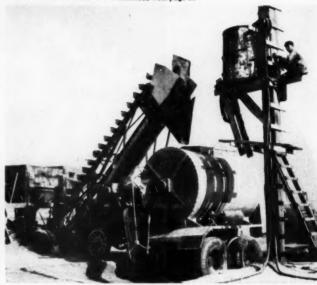
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1021



On most major construction jobs, there are multiple uses for tractor mounted Carco winches and hoists. For towing heavy equipment in muddy or rough terrain, a Carco winch will double a tractor's pulling power. For yanking stumps, moving rocks, buildings or materials, rescuing mired machinery, this extra pulling power pays dividends. Or, with a tractor mounted Carco hoist, you can rig a mobile dragline, slackline, cableway or hoist in a hurry. Save wear and tear on the tractor, give it added reach, make it easier to take hold of any load by installing Carco winches and hoists. See your nearest Carco dealer for complete data on the Carco models that will make man-hours more productive and help you cut costs.





MIXER CHARGING ARRANGEMENTS are simple. Two bins at left are charged with different aggregates by front-end tractor loader. Measured aggregates are loaded into truck mixer by bucket elevator. Storage tank at right adds measured volume of bitumen.

treated with weed killer. The surface mixture consisted of 60% crusher dust, of which 12 to 15% passed a 200-mesh screen, and 40% pea gravel. To this dry mix American Bitumuls Play-Yard Binder was added at the rate of 1 gal per cu ft of aggregate. Aggregates were charged by a front-end tractor loader into separate, but adjacent, bins equipped with measuring discharge chutes. From the bins the transit mixers were loaded by a bucket elevator. The binder was stored in an overhead tank, fitted with a float-measuring discharge that fed the proportioned bitumen into the truck mixers along with the aggregates.

The spreader drag box, laying a strip 10 ft wide, rode on two plank sled runners, 6 in. wide and 10 ft long. At the rear was an adjustable screen for controlling thickness of the mat. The truck mixer discharged into the box and pulled it along at the same time. At the rear inside corner of the box was a port whose opening could be controlled by a man with a hand shovel to let a small amount of mix through to fill the joint between new and old strips. When end of strip was reached, the front-end loader lifted and turned the box with a chain sling.

To maintain the desired speed in

paving—4,320 sq yd per day—three truck mixers were required, despite the fact that the haul was short. The paving crew of eight men included three truck operators, one tractor loader operator who also ran the bucket loader, one man on the storage tank, one man in the box and two finishers with long-handled floats.

As can be seen from the accompanying pictures, the final surface was smooth and uniform, true to grade. Total cost, including grading, weed killer and surfacing, was less than \$1 per sq yd.

Want Safety Reprints?

LAST WINTER CONSTRUCTION METHODS AND EQUIPMENT published a three-part article entitled "What Can I do About Safety?". It outlines ten workable suggestions that have paid off handsomely for one contractor who operates a consistent safety program. Reprint copies are available for 15c each, ten or more at 10c each. The information given is useful to any contractor, large or small, especially supervisory personnel. Write to Reprint Department, Construc-TION METHODS AND EQUIPMENT, 330 W. 42nd St., New York 36, N. Y.



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Fully automatic and completely flexible, this Johnson Transit-Mix Plant produces 24 different size and type batches of aggregates and cement for a commercial ready-mix company at Covington, Ky.

Dial on a 24-mix-selector panel provides for 2500-lb. or 3000-lb. (per sq. in.) concrete in ½, ¾ and 1-yard batches. On each size batch there are four individual selections for 3, 4, 5 or 6-inch slumps. This makes it easy to change from one type of batch to another as needed. A "repeater" provides for continued automatic batching of any one selection for a pre-determined number of times. Operator simply sets the mix selector, sets the "repeater", pushes the "start" button . . . and the plant weighs out batches fast, accurately.

Plant is equipped with a 2500-lb. sand batcher . . . three 2500-lb. aggregate batchers for fine, medium and coarse aggregates . . . a 2000-lb. water weigh batcher . . . and a 2000-lb. cement batcher with dual fill valves for selecting two types of cement. All are fully automatic, and are controlled by the Central Dial Scale Unit with pen recording of the weight of each single-material batch.

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(Koehring Subsidiary)

> Main plant units consist of a Johnson 200-yd. All-Welded Bin, with 4 aggregate compartments and a central cement tank arranged for two types of cement...two 1032-bbl. storage silos and bucket elevator for cement. Belt conveyor and bucket elevator system feeds aggregates to bin.

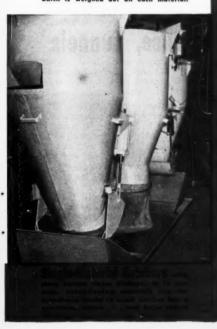
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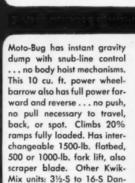
Central Dial Scale Control Unit

on Johnson Transit-Mix Plant at Covington, Ky., is complete with time and date stamp, relays, push buttons, lights, etc., for fully-automatic operation. Graphic recorder shows "full" and "empty" weight of weigh hopper to make sure a complete batch is weighed out on each material.



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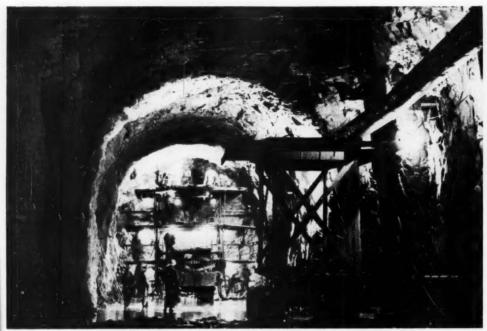
Fast-shuttling Koehring Dumptor® eliminates slow turns at loader, on narrow haul roads, and at the dumping location. With constant-mesh transmission, Dumptor travels same speeds forward and reverse . . . gets its load, drives to fill, dumps and returns to loading unit without turning. Eliminating only 2 turns saves ½ minute on every cycle. Instant gravity dump cuts another 15 to 25 seconds off haul cycles with heavy-duty Dumptors.

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TOP HEADING of tailrace tunnel at Kemano powerhouse is driven from 3-deck truck-mounted jumbo as lower access to big under-

ground chamber. Later, 20-ft bottom bench will be excavated down to draft tube level. Electric shovel loads muck into trucks. (A)*

ALCAN IN BRITISH COLUMBIA...

Methods Spur Underground Powerhouse, Tunnels

By L. L. WISE, Associate Editor

REMEMBER WHEN a million cuyd of excavation was a sizable job in anyone's backyard? Up in the Coast Range of British Columbia Morrison-Knudsen Company of Canada, Ltd., is excavating 1,625,-000 yd of rock from underground in the powerhouse, penstocks, access and main tunnels of the Kemano hydro power development for the ALCAN project.

More than a quarter million yards are coming out of the underground powerhouse alone. All tunneling operations are being carried out to a high degree of perfection but an unusually clever procedure has been developed for excavating the huge powerhouse.

• The project—Only half of the ultimate power development is be-

This is the third consecutive article in a series on the fabulous hydro-electric and aluminum plant project being built in the mountains of British Columbia by the Aluminum Company of Canada, Ltd.

ing built at present. Here is a brief description of this first half of the ultimate stage:

Eight 140,000-hp turbines will be placed in the main powerhouse, 82 ft wide, 697 ft long and 118 ft high with parabolic arched roof—placed 1,400 ft underground to eliminate troubles from snow and land slides.

Turbine runners are at El 210; main floor of powerhouse is El 202.5; bottom of turbine pits is El 181.5. Access to the powerhouse chamber is by a 29x31½-ft access tunnel intercepting the chamber at mid-height; a 29x40½-ft tailrace tunnel 1,400 ft long; and a small exploratory drift topping the chamber at springline of the arch roof.

Eight draft tube tunnels, 16x21 ft, converge from turbine pits into the tailrace. A manifold of eight 10-ft tunnels branches out from two penstocks to feed the turbines. Cutting across the top of this manifold is a 27-ft tunnel to serve as a valve chamber. A 16-ft penstock drain loops around one end of the turbine units.

Two circular penstocks rise within the mountain on a 48-deg slope from powerhouse level to a trans-



SCRUBBER-EQUIPPED Euclid end-dump truck brings load of muck from powerhouse excavation out through tailrace tunnel used as temporary access. Upper level tunnels use mine cars. (C)



POWERHOUSE MUCK, 100% rock, from the top heading is bull-dozed into shafts to drift below by TD-24 tractor equipped with Landis exhaust scrubber. Rig is just below arch roof. (1)

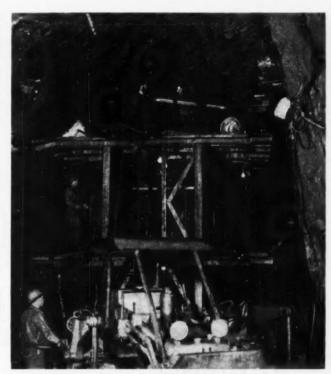
mountain diversion tunnel at El 2,600. These are excavated 14 ft dia in unsupported ground; to 15 ft dia inside of steel supports where they are required. Steel pipe 11 ft in diameter will be placed within the penstock tunnels, backfilled with concrete.

Slope of each penstock breaks into a 700-ft horizontal section at El 1,685, where an adit taps the raises for additional tunneling access. Another adit taps top of penstocks at El 2,600, and also serves as west portal access for the main tunnel. A surge chamber is being excavated above top tunnel level.

The main tunnel is a 25-ft horseshoe section, 10.1 mi long, extending eastward from top of penstocks to the west end of Tahtsa Lake. An intermediate adit has been driven about midway at Horetzky Creek to provide two additional faces for driving.

Kenney Dam will raise Tahtsa Lake to El 2,800, but the east end tunnel invert is at El 2,718 to allow plenty of room for draw down beneath the ice. While the intake structure is being built, access to the east heading is by a temporary sloping adit.

Access to the penstock and west heading tunnel adits at El 1,685 and 2,600 is by cable tramway, described in CM&E November, page 42. Horetzky Creek adit is reached by road, and by helicopter when slides block the road. Ex-



BEARDED MINER starts another hole from the top of a crawler-mounted jumbo moved into position by a TD-9 tractor inside excavation for the 118-ft high powerhouse. (1)

cept for helicopters and float planes, the only way to reach the east heading at Tahtsa Lake is by tug and barge over the full length of the lake—from the end of a 75-mi road built in from the nearest railhead at Burns Lake on the

Canadian National's Prince Rupert branch.

• Attack on powerhouse—Excavation of the main chamber and appurtenances of the powerhouse (Continued on page 76)

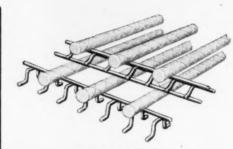
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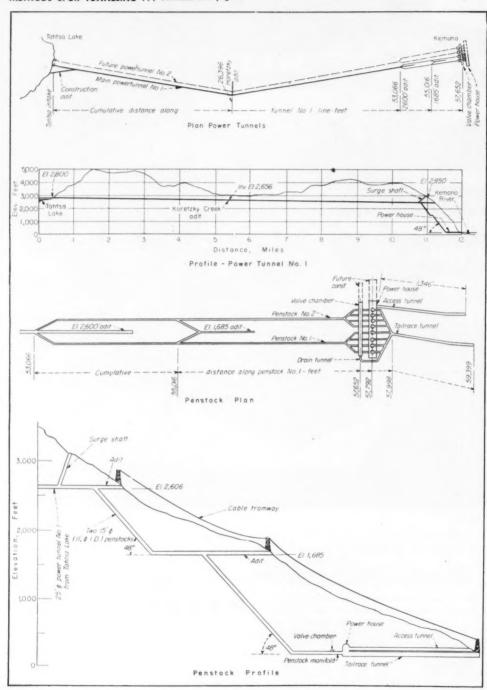
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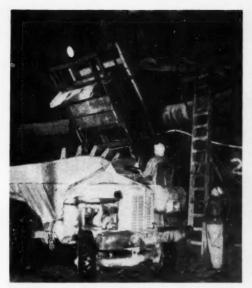
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IT'S A BIG JOB! Tunneling teams in numerous headings are excavating 1,625,000 yd of rock for underground powerhouse, penhalf of ultimate construction, which will place 16 140,000-hp turbines.



AIR-OPERATED GATE at bottom of shaft being driven up slope to start penstock tunnel controls flow of muck into Koehring Dumptor. Rock rolls down 48-deg incline by gravity for bottom loading. (1)



ROOF BOLTING stabilizes weak spots in penstock and west heading adits, saving time and eliminating the trouble of erecting timbering sets. Access tunnels also help speed the project. (C)

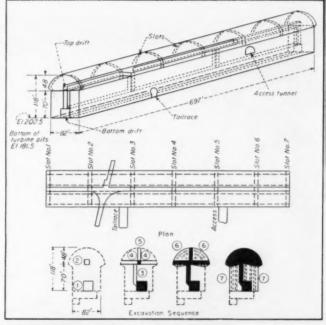
is a marvel of tunneling procedure. From the tailrace tunnel, a 27x27-ft drift was turned each way to run the full transverse length of the chamber at bottom level. From this big drift, 5½x10-ft shafts were raised to springline of the roof arch, 70 ft above floor of drift, at 120-ft intervals.

Next, from the exploratory drift tapping the chamber at springline, another longitudinal center drift, 10x10 ft, was driven full length of the powerhouse, intersecting tops of the raises from the drift below. From this top drift, 10-ft transverse slots are being cut out for the full width of chamber from springline to the arched roof at the same 120-ft intervals as the raises from below.

The first step in slot excavation is to drive 10x8-ft cross-drifts at springline to beyond the wall plate lines, then raise 10x10-ft shafts to crown line. From these shafts and drifts, the remainder of each slot is drilled and shot down.

From the transverse slots, 141 holes 55 ft long are drilled into each face. Several of these long holes are loaded at one time with 1½x8-in. 60% dynamite. Biggest single blast so far is 76 holes, moving 3,575 cu yd of rock.

Between blasts, the rock is pushed down the shafts to the



CLEVER TUNNELING PROCEDURE marks excavation of mammoth underground chamber for main powerhouse, 82 ft wide, 697 ft long and 118 ft high with arched roof. Sequence of operations, after access was gained from outside, is shown in bottom diagrams: (1) 27x27-ft longitudinal bottom drift; (2) 10x10-ft longitudinal top drift; (3) 5½x10-ft raises at 120-ft intervals from bottom to top drift; (4) 8x10-ft transverse drifts at 120-ft intervals; (5) 10x10-ft raises to arch crown; (6) 10-ft slots cut out at 120-ft intervals (aimond drift) ing between slots; (7) down drilling from top heading to complete chamber excavation.



SELF-DUMPING Granby-type 6-yd cars haul all muck from main tunnel. Here is a train dumping down the side of the mountain

from the 2,600-ft level at the west heading. Terrain is rugged and climate cold. Note snowy peaks in background. (C)



THE GREEN LIGHT is given by motorman of muck train to traffic inside tunnel as he pulls out of Horetzky Creek adit portal; one of many safety precautions. [1]

powerhouse floor level and loaded with Eimco loaders or power shovels into Koehring Dumptors and Euclid end-dumps for hauling out the tailrace tunnel and dumping into the Kemano River Valley. Here it is dozed with an International TD-24 to extend and raise the construction campsite against the sudden flooding which is characteristic of the Kemano and to develop desired useful space for the permanent plant.

The arch roof section of the powerhouse will be completely excavated and concreted before vertical blast holes are drilled down from the springline to finish the cavern. The crown of the roof is 47 ft above the springline.

As soon as there was enough room in the arch roof excavation, an International TD-9 with Isaacson dozer was winched into the space from the access tunnel to speed up mucking operations. The tractor was equipped with a Landis scrubber, to filter out objectionable exhaust fumes. This small crawler proved so successful in mucking out that an International TD-24 dozer, also with Landis scrubber, was brought in to do the job.

Excavation of all 9-ft manifold tunnels leading from the two main penstock raises into the eight tur-

(Continued on page 80)

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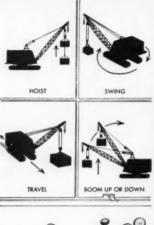
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METHODS SPUR TUNNELING . . . Continued from page 78



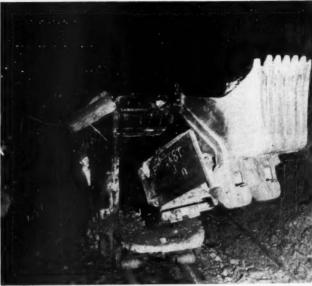


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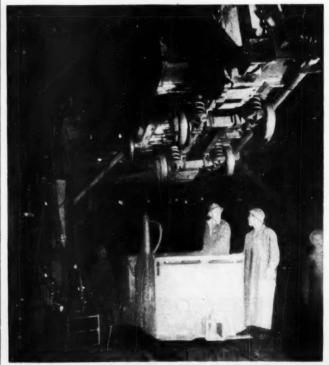
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DIPPER DUMPS A LOAD on the belt of this 100-hp Conway mucker at one of the four headings of the main power tunnel. These rigs help M-K crews establish new records. [1]



CHERRY PICKER, mounted on rear of drill jumbo, leapfrogs muck cars at west heading of 25-ft main tunnel. All upper level tunnels use muckers and rail-mounted haul units. [1]

bine pits and all discharge branches leading to the tailrace have been completed. The valve chamber connecting the manifold tunnels has not yet been driven. It will be excavated by the same general long-hole diamond drilling method used in the power chamber.

The 17½x13½-ft cable tunnel is yet to be completed. This tunnel will carry the high-voltage current from the powerhouse to the transmission line. The drainage tunnel from the valve chamber to the tailrace is complete.

Most of the smaller 9-ft tunnels were drilled from a mobile sixman drill frame handled by an International TD-9. Men on this frame used Gardner-Denver equipment. The balance of these smaller headings was worked with Canadian Copco equipment from jack-legs carried on the invert.

• Attack on penstocks—Another interesting underground operation is excavation of the penstock tunnels. These two 15-ft dia bores slant up the inside of the mountain at a 48-deg angle. This angle was selected as best for construction—rock will slide freely down such a slope.

The penstocks are stepped at El 1,685 permitting work upward from that level, as well as from the powerhouse level.

On each of the penstock tunnels, a 5x10-ft shaft was first raised from the lower levels. Workers operated from staging attached to bull horns—1¼-in. dia looped rods anchored in the wall of the raise.

The staging was built to separate the inclined shaft into two 5x5-ft sections. The bottom one carries muck and is controlled at the bottom by compressed air-operated gates. With two penstock tunnels rising together, drilling and staging erection crews are alternated between headings.

After the raises are completed, work will start immediately on developing the penstock tunnels to full dimension. This will be done by slashing down from the top, letting the muck roll down the chute.

• Attack on main tunnel—The 10-mi, 25-ft main tunnel is being driven from four headings. Half way between the intake heading at West Tahtsa Lake and the heading from Kemano, headings are being pushed in both directions from an adit at Horetzky Creek, El 2,640. Muck from all four headings is hauled by narrow-gage trains of

(Continued on page 84)



ROSCO ORIGINATED the folding type spraybar, now universally accepted and proven through years of outstanding performance, and used on all Rosco Bituminous Distributors. Rosco spraybars are designed to prevent streaking—with oversize piping and without internal gadgets or inside tube restrictions. This provides free and unobstructed flow of materials to nozzle—insuring uniform pressure over length of bar. When folded, Rosco bars provide more than ample road clearance, and may be lifted when traveling to maintain a 21" ground clearance. When extended, a center safety breakpin eliminates breakage of bar caused by any road obstruction, allowing each half of the bar to pivot without spillage—a two-fold economy feature.

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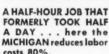
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METHODS SPUR TUNNELING . . .

Continued from page 81

6-yd Granby side-dump cars pulled by trolley and battery locomotives.

The muck is dumped over the steep sides of tunnel portal benches at the Kemano or west heading. At the Horetzky adit, muck is handled the same way, but dumped to produce additional level working and storage areas. At the dumps, International TD-24's and TD-18's doze the material to extend the work benches. At the West Tahtsa Lake intake, muck is carried about 1,000 ft out on a lake fill, dumped and graded with a Caterpillar D-8 crawler.

Rails servicing each of the dump areas are moved frequently to keep them at the edge of the fill. Mucking at all headings is by Conway 100-hp rail-mounted muckers.



CARBIDE-INSERT forged drill steel, made in Sweden, distributed by Canadian Copco, is sharpened for re-use at Tahtsa Lake heading. (C)

• Methods and equipment—Drilling equipment at the Kemano and two Horetzky headings consists of 15 Canadian Ingersoll-Rand pneumatic feed-drifters, with 5-ft feed range, handling standard drill steel with X-point detachable carbide bits, and operated from a threedeck jumbo.

Each shift, 15 drillers, 15 helpers, and 3 to 5 additional men round out the crews at the heading. Drills are operated from CI-R 500-ft compressors powered by International UD-24 diesel engines.

The West Tahtsa bore uses a sim-



SMALL HEADINGS in powerhouse area are mucked out by Ingersoll-Rand air tugger hoist, mounted on the back of a Koehring Dumptor and operating a slusher scraper. [C]

ilar drilling set-up but with Canadian Copco equipment, and a smaller crew of 16 drillers with 5 helpers. The drills and chisel-point carbide bits are lightweight and require fewer chuck tenders than the conventional heavy drifters.

Typical drilling cycle for all heading crews is 1¾ hr for drilling 87 to 96 holes, 13 to 15 ft deep. Loading dynamite takes 45 min. Then the heading is shot and ventilated, and, if the time of the blast fits, the men are served a hot lunch during this period. The balance of the shift, 4½ to 5 hr, is used in mucking.

A normal rate of advance is almost 12 ft per shift which includes mucking about 250 yd of blasted rock, but as much as 48 ft advance in 3 shifts has been made. Each shift usually handles a little more than a complete cycle of drilling, blasting and mucking for each 12-ft advance—when the rock is good and does not require supports.

A record—According to the November issue of Em-Kayan, Morrison-Knudsen house magazine, the west heading crews at Kemano claim a new world's record in driving 248 ft of 25-ft tunnel in six days.

Following are technical statistics on the record-breaking week (September 22-27 inclusive) of tunnel-driving:

Total footage for week 248
Total in-place yardage for
week
Total number of drills 16
Total number of holes drilled 97
Total number of rounds 23*
Average advance per day, ft 41.3
Average advance per round, ft 10.8
Average yardage per ft of tun-
nel, cu yd 23
Average yardage per round,
cu yd 248
Average mucking time per
round 3 hr 1 min
Average yardage mucked per
hr, cu yd 82.5
Average drilling time per
round
Total footage of drilling 26,385
Total footage drilled per
round 1,147
Average number men per
shift 44
(*) Includes twelve 11-ft and eleven 13-
ft rounds

For the Aluminum Company of Canada, P. E. Radley is manager, and Franklin T. Matthias is assistant manager. Karl Roestad is resident engineer at Kemano.

A. O. Strandberg is project manager for Morrison-Knudsen Company of Canada, and Russell H. Madsen and V. A. Roberts are assistant project managers. R. E. (Whitey) Davis is general tunnel superintendent in charge of all underground operations.



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TURNS with POWER ON BOTH TRACKS

SWINGS FULL LOAD WITH THE GREATEST OF EASE—a tight turn with a lift gives the TD-24 a chance to show off its power.





International Steering system helps "Big Red" —the TD-24—do more work in less time

What's the pay-off for a crawler tractor?

The most work done per day.

What delivers the pay-off?

Superior speed and power—and fingertip steering to take advantage of that speed and power. Like this:

The operator of your Big Red TD-24 drops one track into low speed, and the huge crawler comes around, moving right along with its load, turning with power on both tracks!

The TD-24 makes gradual turns with power on both tracks, feathered turns of any degree, or pivot-turns—all with fingertip ease of control. Planet Power Steering lets the operator turn while pulling heavy loads and also maneuver in close quarters. That's why the TD-24 is the most versatile of all crawlers.

Add this to the TD-24's tremendous power—more drawbar horsepower than any other crawler on the market—and you get what you want: more dirt moved, more work done per day.

Isn't that reason enough to put the TD-24 to work for you? Especially when it's backed by your International Industrial Distributor's complete service facilities. Get the details... you'll be a TD-24 man from then on in!

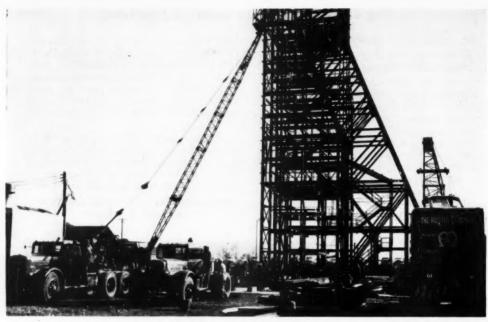
INTERNATIONAL HARVESTER COMPANY CHICAGO 1, ILLINOIS



INTERNATIONAL

POWER THAT PAYS





BIG PULL ON 200-TON HEADFRAME is handled easily as two of rigging. Long-boomed Link-Belt Speeder in background was Autocar winch trucks and a P&H truck crane pull on lead lines used for steel erection, had no part in the moving operations.

Luff Fall Rigging Moves Bulky Headframe

MOVING A HEADFRAME 134 ft high and weighing 200 tons, is easy. All you have to do is plan for weeks in advance and put a veteran rigger on the job who keeps an eye on every detail (there are many) and who knows instinctively what to do if the job gets snagged.

The Austin Company did just that early last month when it placed a towering steel headframe for the New Jersey Zinc Co. over the new Friedensville mine shaft near Bethlehem, Pa. The shaft already is 1,260 ft deep, sunk and finished with the aid of a temporary wooden headframe.

• The setup—Erection of the permanent steel headframe directly over the shaft would have delayed mining operations for an estimated four or five weeks. Instead, there were only two days of delay chargeable to moving and setting of the steel structure. Few headframes have been placed in this fashion in the U. S., and Austin officials believe this is the largest so handled.

For erection, a temporary foundation was laid down 30 ft east of the shaft. Width of the head-frame is 37 ft—making a move of 67 ft necessary upon completion. Four 90-lb railroad rails were laid on each of the two foundation lines under the columns of the main structure. They were kept in alignment by through-bolts and spacers.

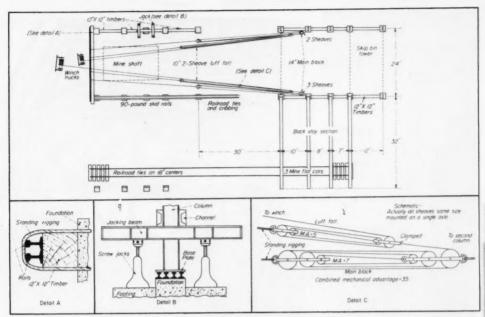
These rails supported practically all of the weight during erection and, when extended, became the skid road for moving the head-frame. Top surfaces were polished and greased to reduce sliding friction

The lighter backstay section of the headframe had its inclined members supported at the bottom by wooden cribbing, with horizontal members resting on three flattop mine cars. On the move, the relatively light load of the backstay section was carried by the flatcars rolling on industrial-gage track with 30-lb rails and ties centered on 18 in.

To prevent spreading of the main headframe members during moving operations, stiffeners in the form of steel struts were welded to the 10-in., 49-lb columns. Steel-cable diagonals fitted with turn-buckles stiffened the tall structure even more. To keep it squarely on its track of rails as it was skidded along, steel guide plates that fitted beween the two center rails were welded to the bottoms of the base plates and, as it worked out, effectively prevented side movement.

• Moving—Austin know-how, in the person of Frank Trimmer, veteran rigger, made the 67-ft move seem almost effortless. Two lowspeed winches on truck tractors supplied the pull. In addition, to insure complete control of forward progress at all times, a truck crane was brought into position and its winch direct-connected to the backstay section on the mine cars. Because of the light load, this pull was through one sheave fastened to the headframe.

Rigging used for the major part of the estimated 76,000-lb pull is not a common hookup. It is called a "luff fall rig", the method and term said to come from Scandi-



LUFF FALL RIGGING hookup sketched here gets the credit for moving the 134-ft steel structure so smoothly and with a minimum amount of power. Details A and C show how the standing rigging is supported against the permanent foundation and how the luff

fall works to provide its great mechanical advantage. Detail B shows how jacks raise headframe off skid rails and then lower into place over foundation bolts. Rigging had to be shortened periodicelly but 67-ft move was accomplished in 3 hr 20 min.

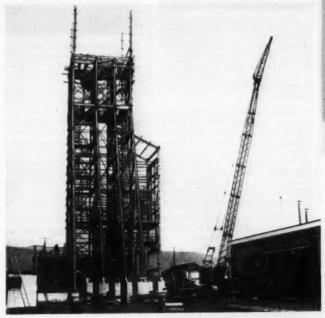
navian sailors. The lead line of the main fall is clamped to one of the blocks of the luff fall so that a decided advantage occurs.

Standing rigging of both main and luff falls was secured to a 12x12-in. timber and two railroad rails acting against the most distant permanent foundation piers. To distribute this force uniformly throughout the foundations, timbers were inserted between all piers of both the permanent and temporary foundations.

As the winches pulled in on the lead lines and the structure moved forward, the luff falls were to-blocked repeatedly. Each time this occurred, the lead line of the main tackle had to be unclamped from the luff fall block and the luff fall had to be stretched out before another pull could be made.

Since the standing rigging was anchored to the end piers of the permanent foundation, the main moving blocks were tied to the second columns of the headframe so that the structure could be pulled completely home without relocating standing rigging support for the final few feet of move.

In the early stages of the moving operation, distance covered on the



LAST STOP puts the headframe over the mine-shaft. Moving and bolting on foundation took only two days. Concrete piers in foreground are for ground turning hoisting sheaves.



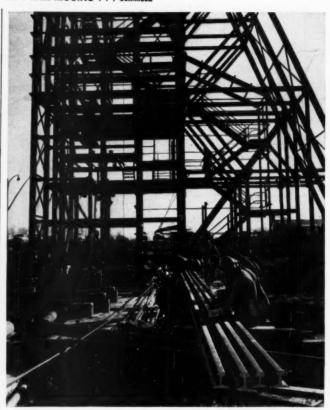
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Thermoid Company Trenton, N. J.



CAREFUL GREASING of the 90-lb skid rails precedes moving operations. Timber-covered mine-shaft is at left of men in foreground; pipe leading out of it is from unwatering pump down in the hole. Standing rigging is fastened to 12x12-in. timber just below pipe.

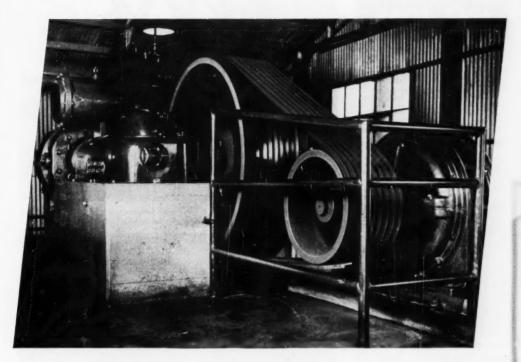
rails by the headframe between each retackling approximated 4 ft. These distances progressively became shorter as the headframe approached the mine-shaft due to the nature of the rigging employed. To speed the move for the last half of the trip, the winches were moved farther away and 10-ft increment moves obtained. Net time for the moving was 3 hr 20 min. The average rate of travel was 2.5 from

• Good tricks—An air-powered tugger mounted on the headframe substituted for the brawn of men and saved time to boot. It pulled out the heavy tackle for a new hookup whenever rigging had to be adjusted for the next move. It also removed the lead flatcar under the backstay before the move could be completed. Snatch blocks at strategic points made the tugger highly versatile.

The steel headframe had been built up directly on the skid rails over a period of time. Upon completion, its 200-ton mass was stuck on the skid rails and could not be broken free by the pull developed.

Two ingenious battering rams were brought into play. Two heavy railroad rails, one along each line of skid rails, were laid on rollers behind the structure so they could be brought against headframe columns. When all was ready, the winch trucks put tension on the pulling tackle, and several men rammed each rail against the steel from the rear. The impact of the battering rams helped free the headframe on the first attempt, and the winches kept it moving until it rested on greased portions of the skid rails

Although pneumatic riveting hammers were on hand to vibrate the rails for every new start, they (Continued on page 92)



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Excavating: D'Aquila Bros., for Grove Shephard Wilson & Kruge



PUMPING 5 MILLION GAL DAILY FOR NEARLY 6 MONTHS

PHOTO SHOWS small part of a dewatered area for receiving pit 200x 31 ft, the soil being extremely coarse sand with overburden of meadow mat. Prior to drainage, ground water table sometimes rose as high as 2 ft above natural ground, due to tides. Inleading ramp necessitated a 40-ft gap in header perimeter.

• Certainly no simple problem! Yet a Griffin Wellpoint system (still at work as this is written) has continuously handled 5,000,000 gal a day, maintaining this heavy burden for 6 months. Pumps have been swallowing vast quantities of salt water from Jamaica Bay 2000 ft away. Despite this, they have held up perfectly and standby capacity has never been used. That's Griffin dependability!



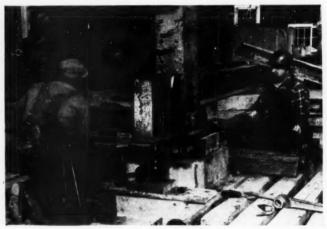
WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y. Hammond, Ind. Houston, Tex. Jacksonville, Fla.

In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Holifax



BACKSTAY SECTION is supported on three mine flatcars coupled together. Main frame members were kept from spreading during move by diagonal cables and extra struts.



LAST STEP in positioning of permanent headframe is lowering it over anchor bolts on foundation. This was done with 30 screw-type jacks operated in unison.

were not needed. Once the base plates were well greased, the head-frame could be started and moved smoothly and easily. Close coordination between the three winches doing the pulling—to forestall cocking of the headframe guide plates between the rails—was handled by Trimmer.

The headframe was erected and moved at an elevation to clear the anchor bolts in the permanent foundation. After it was in precise position over the bolts, 30 screw jacks lowered it to the foundation. Since this was a more tedious operation than the moving, jacking was begun and completed the following day—so that the structure would not remain on jacks overnight.

The Austin Company also con-

structed other extensive surface facilities for the new mine site, including a hoist room, miners' change and shower rooms, offices, warehouse and maintenance buildings. The headframe is designed to take a total load of 100,000 lb. Figured in are two ore skips, a combination cage for men and materials, counterweight, ore, materials, men and enough cable to reach to the bottom of the 1.260-ft shaft.

Otto Nygaard is field superintendent for Austin and Walter Evans is resident manager for New Jersey Zinc. Mining operations incidental to sinking and finishing of the shaft and below-ground construction are being done by E. J. Longyear Co., mining engineers of Minneapolis.



Towering 100-ft boom, 30-ft jib give long reach to P&H 555-A...

Biggest Over-the-Road Truck Crane

Another Equipment Development Report By HAROLD W. RICHARDSON, Editor

WAY BACK IN 1947 Harnischfeger Corporation officials started thinking about a heavy-duty truck crane with over-the-road mobility. They felt there was a distinct need for a high-capacity, highly mobile rig solely designed for steel erection and other heavy lifting without any shovel or backhoe counterparts.

Specifications handed to the design engineers were simple, but emphatic: Start from scratch and don't follow any previous model; keep the over-all weight and axle load distribution down to permissible limits of transportation over highways under permits; keep over-all width to 10 ft, and clearance height to 12 ft 9 in. for passage under overhead road structures; and design for maximum

stability and high lifting capacity. Veteran Frank (Crane Man) Edwards, sales manager for small excavators and truck cranes, supervised the development of the machine. He consulted various state highway officials to determine per-

missible axle loads.

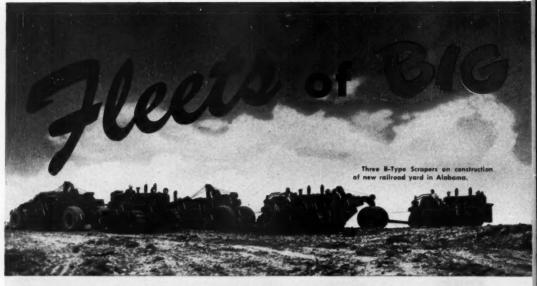
Out of it all came the brand new P&H 555-A, rated as the biggest over-the-road truck crane in the field, with a capacity of 35 tons at 15-ft radius with a 50-ft boom at any point on the full circle. For more than a year now a few test machines have been working under actual construction and crane service conditions.

Their performance more than satisfied Harnischfeger officials, and the rig now goes on the production line. Following is a brief description of the crane from bottom up. Typical specifications are listed in the accompanying table.

Harnischfeger makes all of the carriers, and that for the 555-A is not much different from P&H standard design. Its frame, rigid and weave-proof, is equipped with two sets of double-beam outriggers. Powered by a Waukesha 145-GKB gas engine, it can travel up to 40 mph on the road. It has 15 forward and 3 reverse speeds, Vickers hydraulic steering and P&H Timken rear axles. Remote control from the crane cab is available.

The upper assembly, brand new in design, is all-welded alloy-steel throughout for maximum strength, has a low center of gravity, minimum weight and-high lifting ca-

(Continued on page 96)



are cutting dirt-moving costs

EVER notice how many Big Red Teams there are working in fleets?

One of these Bucyrus-Erie Scraper and International TD-24 Tractor combinations sells another — and another, and another. Such repeat orders placed by satisfied owners are the best possible endorsement.

Why not do as others have—arrange for competitive tests between the Big Red Team and any other dirt moving combination? You will see for yourself that B-type Scrapers load faster, in shorter distance—that they get bigger loads with or without pushers—that they haul more dirt, move it cheaper. Ask your International Industrial Tractor Distributor for details.

B-250

Scrapers—22 yd. (struck measure)

B-170A

Scrapers—16 yd. (struck measure)



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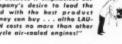


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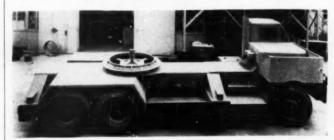
"Over 80 million consumer mes-sages help me sell LAUSON . . . in magazines like COUNTRY GENTLEMAN, TIME and FARM and RANCH . . . and many others. That's why I feature the LAUSON name when I sell power units!"

For Betails, Write: THE LAUSON COMPANY New Holstein, Wis. Division of Hart-Carter Company In Canada: Hart-Emerson Co., Ltd., Winnipeg.





BIG GAS TANK, weighing 371/2 tons, is set on foundations by P&H 555-A crane boomed out to 22-ft radius with only rear outriggers in use.



HARNISCHFEGER-MADE CARRIER for the new 555-A crane is rugged all-welded construction. Note that live roller circle is set far back on carrier frame. Two sets of outriggers are standard equipment.

General Specifications-P&H 555-A Truck Crane

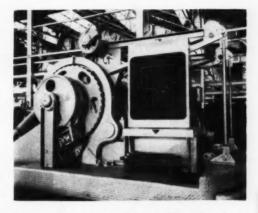
Contrat sport		
UPPER		CARRI
Tail Clearance Engine—Waukesha Gas	10 ft 6 in.	Engi
Model 140GK (Direct) Two Speed Transmission Ratio Drum Diameter Hoist Line Speed—Normal Hoist Line Speed—Low Gear Lowering Line Speed Normal Lowering Line Speed Low Gear	1 to 1 1.70 to 1 21½ in. 169 fpm 99 fpm 250 fpm 148 fpm	Nun Nun Max Who Dist
Swing Speed (Normal) Swing Speed (Low Gear) Diameter of Roller Circle Number of Live Rollers	4 rpm 2.3 rpm 69 in. pd 24	Pow P&H

15
3
40 mph
220 in.
54 in.
14:00x20
ns
33,000 lb
lic

CAPACITY 50-FT BOOM
85% Tipping from Load Cell Test on Firm Level Ground

Radius, Ft	360 deg With Outriggers	Side No Outriggers	Rear No Outriggers
	······ Guingguis	no outriggers	rio Gatriggers
15	70,000 fb	30,500 lb	38,000 lb
20	43,000	23,000	27,000
25	31,000	17,000	20,200
30	23,000	12,700	15,300
35	18,000	9,700	12,400
40	14,000	8,000	10,300
45	12,000	6,700	8,800
50	10,600	5,800	7,700
			_

HEAVY EQUIPMENT has been shoved back on upper frame to act as permanent counterweight. A feature of the new crane is heavy-duty independent planetary boom hoist shown at left. To lower right of the Waukesha gas engine can be seen lugs for holding hydraulically lifted counterweights in place. Hydraulic lifting device, working from gentry truss, has not yet been installed on this machine.



pacity per lb of weight. Engine and hoisting machinery have been shoved to the rear to utilize this weight as permanent counterweight and to keep front-end weight down. The crane is powered by a Waukesha 140 GK gasoline engine.

An outstanding feature is a built-in hydraulic lift apparatus for raising or lowering the twosection (8000- and 7000-lb) counterweight. When lifted into place the counterweight is secured by bolts. One man can attach or dismantle the counterweight safely and quickly. This hydraulic lifter makes removal of the counterweight easy for stripping the rig down to highway travel weight.

Another feature is separate lowpressure hydraulic controls for each operation, none being dependent upon any other control. This gives the operator the feel of the load. An independent planetary boom hoist combines the advantages of worm-type operation and live boom hoist speeds. Planetary lowering allows inching of loads into place. A two-speed transmission on the hoist line provides higher line pull at slower line speed with maximum control and safety. These special controls classify the rig as an erection crane. Two hoist lines are available for clamshell or dragline service.

(Continued on page 99)

GROUND WATER COMPLETELY INTERCEPTED



At the site of the sewage pump station, men work nineteen feet below ground water level. Note that men are not wearing rubbers or boots.

IN HIGHLY STRATIFIED AND EXTREMELY UNSTABLE MATERIAL

CONTRACTOR Donald M. Drake of Portland, Ore., had to go down 19 feet below ground water level through highly stratified and extremely unstable material on this sewage disposal system job for the City of Longview, Wash. The high water table—only two feet below natural grade—created serious problems in the excavation.

The new Tacoma office of John W. Stang Corp. solved the problem economically with a flexible Stang dewatering system that effectively penetrated the various strata so that ground water was completely intercepted.

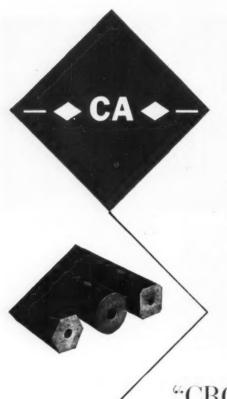
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CRUCIBLE DOUBLE DIAMOND takes drill steel out of the "CROWBAR CLASS"

At last! A drill steel that's not in the "crowbar class" . . . because Crucible's new Double Diamond hollow drill steel is a tool steel . . . made by drill steel specialists to tool steel specifications. Its greater fatigue strength means lower cost per foot drilled . . . and saves those valuable carbide bits

Find out first hand about this step forward in drill steel — find out how Crucible DOUBLE DIAMOND in your drilling operation does a better job . . . faster! Write for full details. Do it now!

this Alloy
Hollow Drill Steel
has greater
fatigue strength...
cuts bit losses...
lasts longer

CRUCIBLE

first name in special purpose steels

52 years of Fine steelmaking

HOLLOW DRILL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

BIGGEST TRUCK CRANE . . Continued from page 97

The top frame rests on 24 live rollers, stabilized by double-hook rollers, for full weight distribution around the circle.

A wide box boom with rigidly coupled sections starts out with two 20-ft lengths as standard. These can be extended by 10- and 20-ft increments up to 100 ft, and then a 30-ft jib may be added, capable of handling a 5-ton load with a 130-ft lift.

Fully equipped with outriggers, counterweight, load blocks and 50-ft boom, the crane weighs 80,800 lb. For travel, these elements can be removed for separate hauling, if desired, until the machine weight is stripped down to 58,800 lb. Traveling light, the crane rolls over most highways in the country under permit.

So here's Harnischfeger's entry into the heavy truck-crane field—a highly mobile, heavy-duty unit featuring hydraulic counterweight lifters, hydraulic control, planetary boom hoist and two-speed hoist lines.

Redwood Gets the Job

DURABILITY OF REDWOOD again makes news for construction men. The California Electric Power Co. recently completed construction of 3,350 ft of flowline pipe in the Sierras above Bishop, Calif. The new flowline is constructed of top quality California Redwood and carries water over rugged terrain to a hydro-electric plant.

The new line, 54 in. in diameter, replaces a 48-in. wood flowline in use since 1908, and also will bring an increase in power. It is made of 2x6-in. redwood staves, bound together by exterior steel bands. It was installed in seven weeks by a force averaging 40 men who had to combat difficult mountain country at an altitude more than 7,000 ft.

The old pipe had been laid underground, but the new one rests above ground on redwood cradles which, in turn, are supported on concrete footings. Off-the-ground construction is expected to give the new pipe even longer life than its 44-yr-old predecessor.

Although durability of the wood has not changed in the last 40 yr, construction costs are almost six times as high. The California Red-wood Association looked up some figures and reports that the flow-line laid in 1908 cost \$6.51 a ft—the new one, \$37.40 per ft.



The big fellow in the CARVER line. Enough capacity to move a river! Rugged oversize-construction plus high efficiency and fastest priming put this giant in a class by itself. A big pump for big jobs—construction, well-point, irrigation, dam construction, water supply, etc.

Big or small—CARVER makes them all, from 4,000 G.P.H. up, engine, belt or motor drive. Whatever your pumping problem, see your CARVER Distributor today. Ask him for Bulletin 110, or write Carver Pump Co., Muscatine, Iowa.

CARVER CONTRACTOR PUMPS

. the best buy for better performance



CARVER PUMP COMPANY, 1402 Hershey Ave., Muscatine, Iowa



60,000 TONS DAYS A PITS



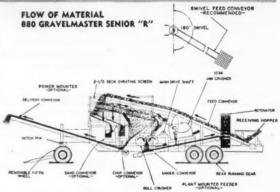
Operating his Universal Senior "R" in four separate pits from Pipestone to Minneapolis, Ray Fischer of Fischer Construction Company produced 60,000 tons of 4" specification in 24 days which included moving and setup.

days which included moving and set-up. The Universal Senior "R's" BIG 10" x 36" jaw crusher, BIG 30"x22" roll crusher, and EXTRA LARGE 4x12' 2½ deck screen made it possible for Ray Fischer to pour out this tonnage under a wide range of pit conditions. Percentage of crush varied from 15 to 43%. Frequently 6 tons a minute were pouring off the delivery conveyor. That's production!

The modern, streamlined design keeps weight within state highway limits...enables fast, easy moving from pit to pit...affords fast set-up. That's portability!

It's easy to see why Ray Fischer placed a second Universal Senior "R" into operation the same season.

Before you buy or specify, get the low-down on the many new Senior "R" features that combine top capacity with ready portability to help you win more bids...earn greater profits on every job. Ask your Universal distributor for details. Write today.



UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS IN CEDAR RAPIDS SINCE 1906

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ANOTHER 20-YEAR USER PRAISES SKIL SAWS

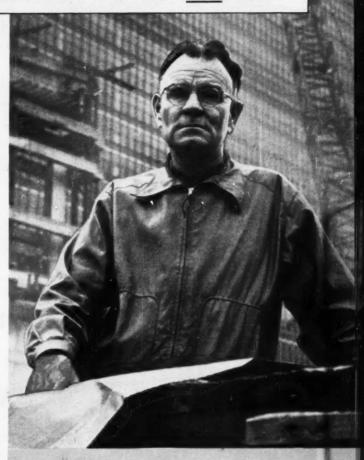
"We use only SAME Saws in form work on United Nations buildings!"

-says Edward J. Murphy, assistant construction superintendent, Brennan, Sloan & Knickerbocker Construction Company, Inc., New York City, New York

"For 20 years, we've done all our portable sawing work with SKIL Saws," emphasizes Ed Murphy. "When we contracted to do the concrete work on the U. N. Secretariate, Underground Garage, General Assembly and Meeting Hall buildings, naturally we gave the job to our timetested SKIL Saws. In making concrete forms, plenty of power must be delivered by the saw to make the necessary long cutoff and rip cuts. And," he adds, "The high-torque SKIL Saw makes fast cuts with maximum power. You can easily see why we've standardized on SKIL Saws."



"You Can See the Cut With a SKIL Saw," says Alford Mastra, using a Model 77 SKIL Saw in a cutoff operation for a concrete form, "and that means maximum accuracy." He continues, "In production sawing on as big a scale as this, you can't beat the SKIL Saw power that prevents stalling!"





SKIL Saw Model 77

One of 10 Models. 71/4" saw with full base adjustments for 0" to 234" vertical depth of cut; 0° to 45° bevel adjustment; 134" depth of cut at 45°. Speed: 3200 r.p.m. No-load. Overall length: 171/4". Weight: 15% pounds

See your Distributor for Complete Information or Call Your Nearest SKIL Factory Branch







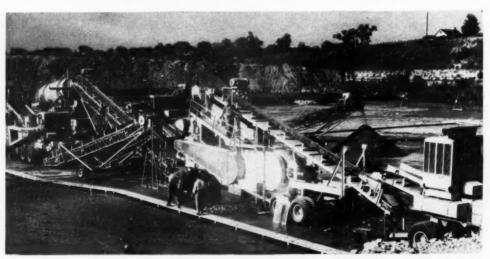




TWELVE-TON LOADS OF ROCK are dumped into hopper of first of fourteen units comprising world's largest portable crushing plant

and run through primary jaw crusher set at 4 in. Flow of materials is controlled here to eliminate surges later on.

Crushing Plant Produces 200 Tons Per Hour...

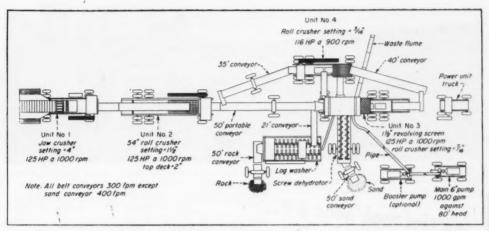


SECOND UNIT (right) houses first reduction crusher which takes drops through screens, joins material from output end of crusher, all larger than 2 in. and crushes it to 11/2 in. Material under 2 in.

and continues to unit No. 3 (left) for sizing, washing, separation.

... and More Than 40 Per Cent Is Sand

By J. M. CONNOLLY, Equipment Editor



FLOW SHEET shows size and horsepower of various crushing and spotting and removal. Plant will process material anywhere in the reduction units. Of 14 units, 13 are pneumatic-tired for quick world, with fourth unit available for extra production of sand.

THE SCENE was a stone quarry on the outskirts of Minneapolis and all eyes were focused on a string of machines that composed Pioneer Engineering Works' world's largest portable rock-crushing plant. Set up for a demonstration, the plant spread some 250 ft from one end to the other and consisted of 14 units, with 13 mounted on pneumatic tires for quick relocation, spotting or removal.

Top-level personnel from various segments of the armed forces were gathered in the pit to watch this gigantic plant produce crushed stone and sand in volume and percentages unobtainable heretofore with a portable plant.

At a signal the operators mounted to their stations. Five of them started up Minneapolis-Moline gasoline engines to power the big crushers. Another revved up a General Motors diesel-powered generating set, then pushed a series of buttons on a central control panel to set some 20 electric motors in operation on conveyor belts and vibrating screens.

Rock, blasted loose in the quarry in just the right size to be loaded by a 1½-yd shovel, was dumped in 12-ton loads into the hopper where it was caught up by an apron feeder in the No. 1 unit and carried to its primary jaw crusher, previously set at 4 in.

The operator of this unit controlled the flow of materials into the entire plant, thus eliminating hills and valleys, or surges, on any of the subsequent conveyor belts or other components.



PORTABILITY of huge unit is demonstrated in photo of scrubber-sizer, highest of 14 units, being towed from manufacturer's yard to quarry for demonstration (and return later).

From there the material was carried by belt to the second pneumatic-tired unit which housed the first reduction crusher. Material larger than 2 in. flowed along the top of a protecting deck and dropped into a 54-in. roll crusher with a setting of 1½ in.

Remaining material, all under 2 in., fell through this protecting deck to a middle and bottom deck where it joined material from the output end of the roll crusher and continued on simultaneously to unit No. 3.

This third unit had a front and rear section. The partly-processed material was carried high into the receiving end of a huge, rotating combination scrubber and sizer for washing, rinsing, sizing and separation.

The revolving screen of this sloping scrubber-sizer was made up with 1¼-in. holes and passed on any material which would not fall through into a 40-in. roll crusher in the second section, from whence it was recirculated and reintroduced into the scrubber to close the circuit.

Material smaller than 1¼ in. passed through the holes of this scrubber during the washing-screening process and landed on a shaker screen of ¼-in. size. Sand



LOG WASHER takes stone passing 11/4-in. screen, removes final type dehydrator simultaneously takes sand passing 1/4-in. screen traces of shale and clay and deposits it on final belt (left). Screw- and passes it off to its conveyor at right, thence to stockpile.



LACLEDE STEEL JOIST PURLINS

When high-strength-yet lightweight construction is needed-consider the advantages and ultimate lower cost of Laclede Steel Joists. They provide the maximum strength per pound of steel used. They place and erect quickly—are adaptable for use with all types of roofing.

Specify these Laclede Products for your construction needs:

Multi-Rib Reinforcing Bars • Steel Pipe • Welded Wire Fabric ● Form and Tie Wire ● Spirals ● Conduit Corrugated Steel Centering
 Electrical Weld and Gas Tubing.



passing this screen was fed into a screw-type dehydrator and finally to its last conveyor belt which deposited it on a stock pile. Anything larger than ¼ in. passed over this shaker screen, fell into a receiver, thence into a log washer where any final traces of shale or clay were removed, and was finally transported to its stock pile.

At the end of one hour, more than 204 tons of material had been processed to exact specifications; 44% was sand that had passed a 1/4-in. screen, and the balance was rock that had passed 11/4 in. All hands were enthusiastic in their praise of the plant's performance.

For Pioneer in general it was a red-letter day. For Melvin Ovestrud, Pioneer's president, and J. A. Hanratty, his tireless expert on crushing problems, it was a triumph traceable to many years of preparation, planning, experimentation and patient development.

For months on end they had burned midnight oil with various departments of the armed forces and had often called on their many years of experience in every phase of rock-crushing and materials-handling problems. It had been a long, hard struggle from the day, back in 1942, when the Corps of Engineers gave them their specifications RC-201.

These demanded a plant that could produce 150 tons per hr of concrete aggregate from any workable rock quarry or gravel pit in the world. Further, it had to be able to (1) receive materials from trucks loaded by a 2-yd shovel; (2) crush it to a maximum of 2-in. square mesh in the first case and 11/4 in. in the second: and (3) in either case, produce not less than 40% of the product passing 1/4-in. mesh while operating as a wash-

(Continued on page 106)



pound for pound ... more value!

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GARDNER-DENUER
600

You get all you pay for when you buy a Gardner-Denver 600 Portable . . . including:

- Ready starting without pampering
- Simple, gadgetless design
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 any day
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PLUS fuel economy.

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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

Pick the right jack for the job

...from the world's most complete line of hydraulic equipment



TWO EXTRA-HIGH-LIFT BLACKHAWK JACKS (Model EA-27), yoked together to pull well casing, have top height of 49½", lift 20 tons each. Don't do it the hard way — do it the HYDRAULIC way!



YOU GET ALL THESE HYDRAULIC TOOLS ONLY FROM BLACKHAWK

HYDRAULIC

PIPE BENDERS

Save buying time when you need hydraulic equipment. Specify Blackhawk be sure you'll get the hydraulic tool that will match your requirements exactly.

"PORTO-POWER"

JACKS-PUSH & PULL

Order from leading supply houses. Write for free catalogs. Products of Blackhawk Mfg. Co., Dept. J-23122, Milwaukee 1, Wisconsin.

HYDRAULIC

KNOCK-OUT PUNCHES

CRUSHING PLANT . . .

Continued from page 104

ing plant. It was a long, hard job, but here was proof that this plant would do it.

Another limiting factor throughout this development period was that emphasis had to be put on use of standard, and not special, models. This was demanded for many reasons, chief among which were: (1) lower ultimate price for the taxpayer; (2) no need for extra operating instructions or specialized operators; (3) fewer problems in parts replacement and servicing.

Washed materials were produced at the demonstration through a wet-screening process. However, the plant can produce by a dryscreening process as well. In that instance the flow is the same as with the wet process up to and including a fourth unit. It bypasses the scrubber, however, and neither the log washer nor the sand dehydrator is required. When material is to be produced from gravel deposits, the primary unit can be eliminated and the process begun with the No. 2 unit. Progress through subsequent sections is the same as with rock.

Close Sand Control

Perhaps the most amazing part of the operation is the close control of the percentage of sand produced, up to 40% of total input. When working from gravel deposits where sand content may be high, all excess sand is deflected by a controlled baffle in the second unit and carried off out of the way.

When the opposite is true with rock, and sufficient sand is not produced after passing the scrubber, the material is crushed in the usual manner in the first, second and third units; then carried through a fourth unit that is brought into play for additional production of sand to raise output to the desired level.

Should the need arise, any operator can push an emergency button on any one of the units that will stop all conveyor systems throughout the entire plant. Another eye-opening feature of the demonstration was that the loaded belts could be stopped and started without any special precautions or adjustments.

Two 6-in, pumps deliver 1,000 gpm against an 80-ft head for the scrubber and log washer. From there it is flumed off to a settling pond where it can be re-circulated as many times as necessary.

POWER-DRIVEN HYDRAULIC PUMPS

"I don't see how we could operate without Motorola 2-Way Radio"



MORE THAN EVER—

MAINTENANCE AND CONSTRUCTION MEN CONSIDER

INSTANT 2-WAY RADIO AS PRIMARY "OPERATING MACHINERY"!



A Hard-Hitting, Quickly Applied Construction Tool.

The Uni-Channel can be used as a fixed or fully mobile station. Easy to set up and easy to operate. Just plug in, connect antenna and go to work. The Motorola Permakay filter eliminates 15 nuisance tuning adjustments forever.

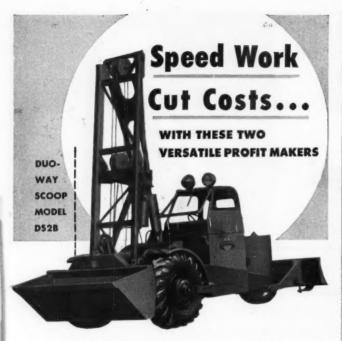
In any wide-spread, hard-driving operation you can count on Motorola 2-way radio to get machines and men on the job faster, keep supplies moving. Motorola mobile radio will streamline your operation, boost your efficiency.

More and more construction men are finding that Motorola equipment pays for itself after only a few months' operation. Motorola engineering gives you dependable performance, lowest maintenance costs and obsolescence-proof circuits that protect your investment for years to come.



Motorola

Communications & Electronics Division 4545 Augusta Blvd., Chicago S1, Illinois Rogers Majestic Electronics Ltd., Toronto, Canad



DUO-WAY SCOOP. With a one-yard scoop on one end and a dozer on the other, Duo-Way Scoop makes money for you coming and going. It hoists, loads, shovels, back-fills, dozes. With quickly installed attachments it is a lift truck, a mobile crane or a concrete pourer.

Duo-Way Scoop has power steering, four speeds forward and fourspeed reverse, planetary drive, full visibility in all directions. Dumping height with track extensions up to 26 feet. Dozer blade is hydraulically controlled, with adjustable angle.



SCOOPMOBILE. Here is the work-proved material mover that scoops, lifts, transports and dumps fast and economically. Fool-proof construction... maneuvers nimbly... scooping capacity 3/4 yard, discharges at 7 feet 9 inches with standard truck.

Quick change attachments for concrete hopper, lift fork, crane boom, track extension to 26 feet. Road speed to 20 m.p.h. under its own power or can be towed from job to job.

ASK FOR LITERATURE. For detailed information on dimensions, weight, turning radius, mechanical construction, etc., ask us for literature on the Duo-Way Scoop and Scoopmobile. Write us today and the literature will reach you promptly.

MIXERMOBILE DISTRIBUTORS, INC.

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DUO-WAY SCOOP . TOWERMOBILE
TELESCOPIC LIFT - LIFT TRUCKS

Box 7527 .

Portland 20, Oregon



Peter Kiewit and...



E. P. Palmer win...

MOLES AWARDS

TOP HONORS of the contracting industry—The Moles Awards for Outstanding Achievement in Construction—will go in 1953 to Peter Kiewit, president of the Omaha firm of Peter Kiewit & Sons' Co., and to Edward P. Palmer, head of New York City's Senior & Palmer, Inc. The awards are given annually by The Moles, a New York association of leaders in the construction industry.

Kiewit has handled all types of work from coast to coast and overseas. Probably his most notable contract is for the AEC's new \$1.2billion Ohio plant. He has been connected with famous Project Bluejay in Greenland, and with such dams as Bull Shoals, Hungry Horse, Garrison, Fort Gibson and

Palmer, an expert in pneumatic caisson work, has long strived to better the business of construction. He was a member of the Contractors Code Authority, president of AGC, construction advisor to the Munitions Board, director of the U. S. Chamber of Commerce, and on the National Joint Board for Settlement of Jurisdictional Disputes.

World's largest stripping shovels use

American Tiger Brand boom supports

The Honne Coal Company owns and operates the largest stripping shovels in the world. One scoops up 50 cubic yards at a bite—the world's largest. Three others have 46 cubic yard dippers. Between them, they move about 4,000,000 cubic yards of overburden a month and uncover approximately 320,000 tons of coal.

The steel "muscles" that support the tremendous booms are largely American Tiger Brand Wire Rope. The boom support cables are 3%" and 4" in diameter, and approximately 91 feet long. The hoist ropes for the huge shovels are 2%" in diameter, and approximately 550 feet long.

The same engineers who designed these special big-shovel ropes, also design the American Wire Rope that gives such superior service on smaller shovels, draglines, and cranes. You can take advantage of their knowledge and experience by calling the American Tiger Brand Wire Rope Specialist in your area. He can help you to select the right ropes for your job—and the right rope may cut your wire rope costs as much as 50%.

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Back, The Right Rape for the Job."

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COLUMBIA-GENEVA STEEL DIVISION, SAM FRANCISCO
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MINITER STATES STEEL EXPORT COMPANY. NEW YORK

U·S·S AMERICAN TIGER BRAND WIRE ROPE



Excellay Preformed

UNITED STATES STEEL



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COMPRESSORS . MIXERS . HOISTS . TOWERS . PAVING MACHINERY

Manufacturers of Reliable Pile Driving Hammers



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Manufacturers of Pile Driving Hammers and Pile Extractors
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On-the-Job Contractor-Labor Relations

by LEON B. KROMER, JR.

New Faces ...

OF THE MANY new faces that will appear in Washington next month, contractors should be particularly interested in Ike's choice for Secretary of Labor. Martin P. Durkin, replacing Maurice Tobin, will recommend candidates for Under Secretary and the two Assistant Secretaries. He will also undoubtedly appoint a new Solicitor of Labor and Administrator of the Wage & Hour and Public Contracts Divisions.

The Secretary of Labor is charged with the administration of the federal labor laws affecting contractors, with the exception of the basic labor relations law-the Taft-Hartley Act. The Solicitor of Labor has under his direction the Davis-Bacon Act, the Copeland (Anti-kickback) Act and the Eight Hour Laws, all of which apply to contractors and subcontractors on federally financed construction. The Administrator of the Wage & Hour and Public Contracts Divisions interprets and enforces the Fair Labor Standards Act (Wage-Hour Law).

Rates Criticized

The Davis-Bacon Act requires that specifications for federal contracts contain a schedule of prevailing hourly rates, as determined by the Secretary of Labor. These become the minimum rates that the contractor and subcontractors can pay.

Many contractors and contractors' associations have long criticized the Solicitor's decisions on prevailing rates, charging that rates higher than those actually prevailing have been set for federal construction. Contractors have maintained that, by setting rates higher than those prevailing locally, the Solicitor has caused upheavals and frequently has nullified negotiations that were under way for new agreements. It also has been costly, they say, to other contractors working in the area who were required to pay the higher rates to keep their men.

No changes will be made immediately in the make-up of the National Labor Relations Board, an independent agency, as its members are appointed for a set term of years. The same is true of the Board's General Counsel. The first vacancy on the Board will occur in the middle of 1953 when the term of Mr. Houston expires.

There probably will be no change in the membership of the stabilization boards as the present members remain only until expiration of the present law in April 1953.

Wage-Hour Law and the Holidays...

Check on your compliance with the Wage-Hour Law as all signs point to a stepped-up enforcement by the Wage-Hour Offices. (See CM&E, March 1952, p. 98) Wage-Hour officials are out after violators, inspecting payroll records and interviewing employees.

You should be particularly watchful with both Christmas and New Year's coming on Thursday.

POINTS TO REMEMBER:

You are not required to pay for time not worked on these holidays.

Many contractors will pay employees who do not work as a matter of policy or under union agreements.

Even though you may pay for time not worked on these holidays the day does not have to be counted as time worked in figuring the employee's hours of work for overtime in that work-week. (Example: Joe Burns actually worked 40 hr in the Christmas week and was off with pay Chirstmas Day. He can be paid 40 hr at his straight time rate even though you paid him for eight hours not worked on the holiday.)

Don't offset against overtime compensation due the pay for time not worked on the holiday. (Example: Using the above example, assume that Joe Burns actually worked 48 hr in that week and you paid him for time and one half his straight-time rate. The holiday pay cannot offset the amount of overtime compensation due.)

The Wage-Hour Law does not require you to pay at overtime rates for time worked on a holiday unless, of course, working that day represents more than 40 hr worked in that week.

(Continued on next page)



Film purchase exposes

\$23,200 Theft

(A true story based on Company File 121465)

About a year ago we took on a new bookkeeper. We were pushed for time so we put him to work without looking up his references.

Soon he began drawing Company checks for his own use. At first they were small. But before a year was up, they totalled more than \$23,200.

Just before our annual audit was due, he quit. Before he left he had bought \$200 worth of movie film for which he paid with a Company check. A call to us by the film supplier about a delivery slip-up led to our discovery of his embezzlements.

Before the police caught up with him he was 1200 miles away, and very little of our money was recovered. We might have had to stand the entire loss he caused but for one thing—our "Dishonesty, Disappearance and Destruction" insurance.

Because we had this policy, the Hartford Accident and Indemnity Company made good to us the full amount of our loss—\$23,232,27.

No contractor ever knows when he may be faced by serious loss due to dishonesty, disappearance or destruction.

Under a "DDD" policy, you can be insured against losses of money, securities and other property due to dishonest or fraudulent acts by employees or others, or through theft, burglary and holdup. Forgery, or the alteration of outgoing checks, drafts or notes is likewise covered, as is destruction of money or securities by any cause.

Ask your Hartford Accident and Indemnity Agent, or your insurance broker, to explain in detail how a Hartford "DDD" policy can protect you and your business. And how little it costs in proportion to the coverage it provides.

Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company • Hartford Accident and Indemnity Company

Hartford Live Stock Insurance Company • Hartford 15, Connecticut

IT'S HERE AT LAST!

A sure way to save money on your next wellpoint job is to get Foundation's new 4" 1000 GPM capacity pump . . . sturdy, compact, for medium and small wellpoint jobs. Why use big 6" and 8" pumping units and pay big fuel bills when you can use this efficient 4" pump, tailor-made for the job? Economical to operate and maintain easy to move around.





4" unit powered by 4-cyl. gas engine

RENTAL - SALES

Write for Literature

Take Bad Weather Off Your Work Schedule This Winter!



HERMAN NELSON PORTABLE HEATERS

Bad weather ahead? Certainly! But that need not upset your winter work schedule. You can beat rough weather with the help of Herman Nelson Portable Heaters. These furnaces on wheels provide clean, pure, hot air to warm your workers, protect concrete pours, thaw and dry materials, cure plaster—do scores of other heating and drying jobs.

The only completely safe portable beater that uses flexible ducts to spot heat where most needed and remember, only uncontaminated air heaters are absolutely safe! Find out how you can profit by using Herman Nelson Portable Heaters on your job this winter. Mail the coupon below for full information.



HERMAN NELSON DE LUXE I

Completely automatic, including temperature control. Fresh air delivery 2,000-2,350 cfm. Capacity rating 280-450,000 BTU. Oil fired, electric powered. Other models available—with gasoline or electric power—and with capacities 125-365,000 .BTU.

Herman Nelson Division, Dept. 14

American Air Filter Company, Inc., Moline, Illinois

Gentlemen: Please send me complete information about Herman Nelson Portable Heaters and a free copy of your Cost Control Booklet.

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Title	
Company	
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LABOR . . . Continued

New CISC Resolution

Have you had a heavy or highway construction project slow down or come to a halt when you lost your men because the Construction Industry Stabilization Commission approved increases in rates for trades employed on building construction? Under CISC regulations you couldn't pay the new rates until they were also approved for your type of construction. It didn't make any difference if the rates for men employed on heavy and highway jobs had always been the same as the rates on building construction.

Delays in authority to pay the new rates, with possible interruption in the work, have been eliminated by a resolution recently adopted by CISC. It permits contractors on heavy and highway work to pay rates approved for building construction if:

1. It was the custom prior to June 24, 1950 for trades employed on heavy and highway projects to negotiate agreements for building construction only and be paid the rates in such agreements when working on heavy and highway work; and.

2. Where specific agreements covering heavy and highway construction are not in effect.

Caution: This is not blanket approval from CISC to pay building construction rates on heavy and highway work unless the above conditions are met.

It would appear also that the resolution prohibits contractors employing non-union employees from paying rates approved for building construction, even where there are no agreements specifically covering heavy and highway work. Note that the first condition requires that the trades on heavy and highway work must be covered by a building construction collective agreement.

Do You Know That:

Building trades wage rates rose 1.3% in the third quarter of 1952? This compares to a .7% rise in the same quarter last year.

Harry C. Bates has been reelected President of the bracklayers? There had been some rumors that Bates was ready to retire.

The Wage Stabilization Board has revised its basic application form, WSB Form 100? Get the new forms at Reginoal Boards and WSB field offices.





SALES AND * SERVICE *

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

W. A. Riddell Corp.: The Hazleton Machinery & Equipment Co., Inc., distributors of contractors' equipment and supplies, has been appointed distributor of Warco motor graders in the Hazleton, Pa., area.

Cleco Div., Reed Roller Bit Co.: Has announced the appointment of Electric Tool & Supply Co., 3000 Santa Fe Ave., Los Angeles, Calif.; Industrial Supplies Co., 324 N. Seventh St., Steubenville, Ohio; and Florida Aviation Corp., 4051 N. W. 25th St., Miami, Fla., as distributors for Cleco products in their areas.

C. S. Johnson Co.: Two new distributors have been appointed to handle Johnson's line of concrete batching and cement handling equipment, including concrete and clamshell buckets. Cook Brothers Equipment Co., Los Angeles, will handle distribution in Arizona; W. C. Caye & Co., Inc., Atlanta, will cover the entire state of Georgia, excepting 24 southeastern counties.

Joy Mfg. Co.: Appointment of Highway Machinery & Supply Co., 1724 Altamont Ave., Richmond, Va., as distributor of Joy equipment for a major portion of Virginia, has been announced.

Syntron Co.: The Syntron St. Louis Sales Co., who represent and sell Syntron equipment in the St. Louis area, have announced the opening of a new store at 4431 Manchester Ave., St. Louis 10, Mo. The Syntron Cleveland Sales Co., representing Syntron in the Cleveland area, have opened a new store at 2919 Carnegie Ave., Cleveland 15, Ohio,

On the Sales Front

Cleco Div., Reed Roller Bit Co.: Has announced the opening of their new sales office and warehouse at 18071 Wyoming Ave., Detroit 21, Mich. B. O. Stoothoff is division manager.

LeRoi Co.: Richard H. Koehler has been appointed manager of the Advertising and Sales Promotion Department replacing Guy Scrivner, who has been transferred to a position in the Engine Sales Department.

Quaker Rubber Corp., Div. of H. K. Porter Co., Inc.: Announces the appointment of F. P. Murken as manager, Industrial Hose Division. In his new position, Mr. Murken will be in charge of sales for all types of industrial hose manufactured by Quaker.

The Galion Allsteel Body Co.: Ray W. Warren has been appointed southeast special representative and will direct sales and service of Galion dump bodies, hydraulic hoists and hydraulic tailgates in Virginia, North Carolina, South Carolina, Georgia and Florida. He will make his headquarters in Raleigh, N. C.

Zonolite Co.: Michael J. Feeney has joined the company as sales representative for northern Indiana. In his new position, he will contact architects, contractors, and building supply dealers in this area.

Davey Compressor Co.: Has announced the appointment of Andrew V. Chandler as mideastern regional manager, in charge of company operations in eastern New York, New Jersey and eastern Pennsylvania.

The S. K. Wellman Co.: Appointment of James E. Clegg as Philadelphia branch manager has been announced. In his new capacity, Mr. Clegg will have complete charge of (Continued on page 116)



WINDBREAKS curb costly work stoppages that defeat construction deadlines. Protect men on the job with rugged Canvas Kid windbreaks. "Extra strength" features built right in at no extra cost:

Double-locking Spur-Type Grommets

Grommets spaced 3 ft. apart.
 Hemmed all four sides



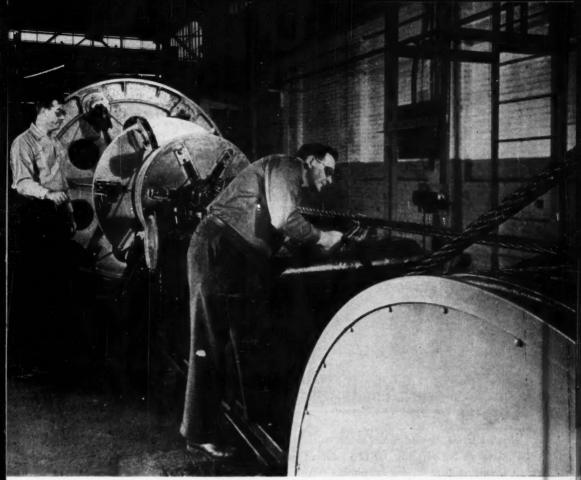
TARPAULINS. Unprotected materials enroute or on the job invite damage and waste. Cover materials with all-new Canvas Kid tarpaulins. Order winter supply now and protect your investment. Water-Repellent Treated, Flame-Resistant Treated, or both.

NEW PACKAGING - Waterproof cover for safety in shipping and storage. THE CANVAS KID CONTRACTOR LINE

Stock Size Min. Fin. Size	Water Repellent Flame and Treated Resistant				
	Min. Fin. Size	12 oz.	14 oz.	12 oz.	14 oz.
16' x 20'	15' 2" x 19' 2"	\$35.40	\$40.00	\$38.50	\$44.00
20' x 20'	19' x 19' 1"	44.25	50.00	48.00	55.00
20' x 30'	19' x 29'	66.40	75.00	72.00	82.50

BUY YOUR WINTER SUPPLY NOW THROUGH YOUR EQUIPMENT DISTRIBUTOR

CANVAS PRODUCTS CO. 1240 S. SEVENTH STREET



Here a big wire rope emerges from Bethlehem's 66-in. closing machine. At this stage of the checking, the inspector is making sure that the diameter is within specified tolerances.

He seldom has to say "No"

Saying "no" can be part of the Bethlehem rope inspector's job. Fortunately, he seldom has to use the veto power, for Bethlehem rope is made with such care that rejects are few. But the inspector won't hesitate to stop a rope if even a minor detail is subject to question.

This is merely common sense. But it's also something more. It's the best possible protection for the buyer. It means that the dollars you spend for Bethlehem wire rope will buy what you pay for—a product

that meets the highest standards of workmanship.

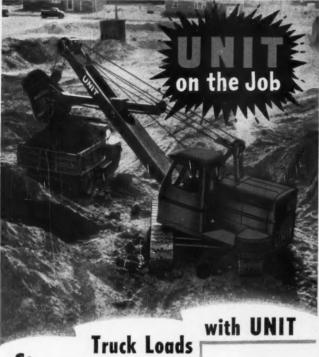
In the making of this product, nothing is left to chance. That's one of the reasons why Bethlehem rope is dependable rope...the kind that will serve you well in the toughest sort of going.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

When you think WIRE ROPE . . . think BETHLEHEM





Step-up

Here's a UNIT 3/4 yard Shovel that's "in there swinging"
... making big payloads. UNIT'S balanced stability and power permit hard digging... produce maximum yardage at low operating cost. Fewer working parts cut down replacements required ... reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions... promotes safety ... increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

UNIT CRANE & SHOVEL CORPORATION
6305 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.



1/2 or 3/4 YARD EXCAVATORS... CRANES UP TO 20 TONS CAPACITY CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL



All Models Convertible to ALL Attochments

SALES AND SERVICE . .

Continued from page 114

Velvetouch jobbing sales throughout the northeastern United States. Siguard E. Jacobson, whom Mr. Clegg succeeds, will devote his entire time to original equipment sales for the company.

American Steel Dredge Co., Inc.: Vernon Mandt has been appointed sales manager of the Bushwacker Division.

Purolator Products, Inc.: Richard T. Karr, formerly a sales engineer in the Detroit office, has been appointed assistant to the vice-president in charge of sales. Mr. Karr will make his headquarters in Rahway, N. J.

Koehring Co.: Two major changes in sales personnel have been announced, John S. Conway, formerly general sales manager, has been named vice-president in charge of sales. John E. Chadwick, former Western sales manager at the Kwik-Mix Co., a Koehring subsidiary, was named sales manager.

Wilson-Albrecht Co., Inc.: Organization of a "Waco"-brand national steel scaffolding division in the Miami area by Waco Scaffolding of Florida, Lakeland, Fla., has been announced. E. S. Nance will head the Miami division, to be located at 3270 N. W. 54th St.

Wooldridge Mfg. Co.: Establishment of a factory parts depot in Atlanta, Ga., has been announced. The new parts depot has been established in co-operation with Statham Machinery & Equipment Co., Wooldridge distributor, at 671 Ford Pl., Northeast, Atlanta, Ga. To provide assistance to the various Wooldridge distributors throughout the area, factory sales and service representation will be maintained in connection with the Atlanta depot.

Pittsburgh Corning Corp.: Has announced the opening of a district sales office in Kansas City. Howard G. Jones, former field representative, has been appointed district manager of the new office located in Room 205, Fairfax Bldg., 101 W. 11th St., Kansas City 5, Mo.

A. I. Holmes has been appointed manager of Foamglas Building Insulation Sales.

In the Main Office

The Thew Shovel Co.: Two officers of the company are being elevated to fill the posts left vacant by the retirement of R. B. Miller, long-time secretary-treasurer and director. Harry L. Reynolds, currently assistant secretary-treasurer and personnel relations director, will become treasurer, and Waid V. Clark, now (Continued on page 118)

Euc Scrapers





Help Beat Schedule at

At Morris Field in Charlotte, N. C., four Euclid Scrapers—two Twin Power and two 15.5 cu. yd. "Eucs"—moved 1200 bank yards per hour on round trip hauls averaging a half mile. Commenting on this outstanding performance, Mr. J. C. Critcher, president of the prime contractor company, said, "High production and low operating costs proved to us that Euclid Scrapers are the best on the market."

A total of six Euclid Scrapers helped complete this 1,400,000 cu. yd. job in half of the allotted

time. The T. & H. Construction Company used two 15.5 cu. yd. Euclid Scrapers to complete a section of the runway.

Euclid Scrapers have all the features required for low cost and high production—power and speed ... fast, easy loading ... large capacity ... quick dumping ... low operating and maintenance costs. Have your Euclid Distributor show you facts and figures on performance which prove that Euclids outperform all other scrapers of comparable size.

The EUCLID ROAD MACHINERY Co., CLEVELAND 17, OHIO

CABLE ADDRESS: YUKLID

CODE: BENTLEY

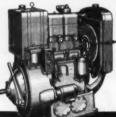






 Nordberg 1, 2 and 3-cylinder Diesel Generator Sets produce from 6 to 30 kilowatts. These sturdy, reliable units are ideal for providing main or standby electric power for almost every need

Standby Electric Service



For Direct Power Drive

Mordberg Diesel Power Units offer from 10 to 45 hp for a wide range of straight power requirements, in direct drive with clutch or stub shaft power



· Nordborg Diesel Pumping Units combine lew cost, reliable power with efficient centrifugal pumps for practically all pumping jobs up to 3000 gpm.

Write for literature. NORDBERG MFG. CO., Milwaukee, Wis.

SALES AND SERVICE . . .

Continued from page 116

controller, assistant secretary and director, will be controller and secretary of the company.

Dravo Corp.: W. L. Newhall who was assistant general manager, Engineering Works Division, has been appointed director of the Department of Research and Development for the company and its subsidiaries. Named as assistant directors were C. R. Horton Jr., and A. J. Liebman.

Special Mention

Marlow Pumps: A complete 16,000sq ft branch factory has been put into operation in De Queen, Ark. In addition to manufacturing and assembling pumps in De Queen, the new factory will also carry a complete inventory of all Marlow pumps, as well as replacement parts.

Gar Wood Industries, Inc.: Will move its National Lift Co. subsidiary from Waukesha, Wis., to the company's recently acquired United Stove Co. plant in Ypsilanti, Mich. Ross Miller, general manager of National Lift, will continue in his present capacity. Manufacturing operations will be under the direction of Kenneth B. True, recently elected vice-president and general manager of the United Stove Co.

International Harvester Co.: nouncement has been made of the acquisition of the stock of The Frank G. Hough Co. of Libertyville, Ill., manufacturers of earthmoving, excavating and material handling equipment. Effective November 1, Hough became a wholly owned subsidiary of International Harvester.

Association Activities

Perlite Institute: Named a new president and four other officers at its annual meeting held in Minneapolis in October. Lewis Lloyd, president of Alatex Construction Service, Inc., of New Orleans, was elected president; J. C. Kingsbury, vice-president of F.E. Schundler & Co., Inc., of Joliet, Ill., was elected vice-president; and three new members were named to the Board of Directors- Neal D. Snyder, Combined Metals Reduction Co., Salt Lake City; K. J. Bercaw, Great Lakes Carbon Corp., New Great Lakes Carbon Corp., New York City; and Kirk E. Hazelton, Cleveland Gypsum Co., Cleveland.

American Institute of Steel Construction: John E. Jackson, president of Pittsburgh-Des Moines Steel Co., has been elected president of the In-

Portland Cement Association: R. A. Hummel, chairman of the Lone Star Cement Corp., New York, was elect-(Continued on page 120)

PRESTRESSED CONCRETE STRUCTURES

A wealth of design data on prestressed concrete—with pointers on when and where to use it. Discusses steel and concrete, their types, and their behavior when some prestressed their behavior when some problem itself, reckoning of dead and live load, the working of all equations. Many detailed examples show how prestressed concrete was used in actual structures. By August E. Komendant, Consulting Eng. 281 pp... 153 illua., \$6.00

LEGAL GUIDE for CONTRACTORS, ARCHITECTS. and ENGINEERS

A handy legal guide to forewarn you of common pitfalis in your field. help for preJust Out!

Just Out!

A situation as a situation serviewing typical problems arising out of construction contracts. Easily understood by the layman, it gives facts and contract provisions in each situation, and citeg cases to sustain the principles of law set forth.

By I. Vernon Werbin, Member of N. Y. Lar and Lic. Prof. Eng. 374 pp., \$4.75

THE BUSINESS OF HOME BUILDING

HOME BUILDING

Explains business methods that make home building more profitable. Gives you "know-how" needed to make a profit with minimum risk to your money. . . a practical tors that determine the market for your product . . . the benefit of production knowledge based on the experience of other builders. By Kenneth B. Johnstone, Carnegie Institute of Technology, and Charles Joern, Wm. Joern and Sons, 289 gp., Illus., \$4.50

CARPENTRY for the BUILDING TRADES

This concise handbook discusses every detail of small residence and frame house construction, giving instructions and disgrams for each operation, covers methods that meet FHA requirements . , gives best practices for framing, bracing, roofing, etc., and advantages of each method. By Elbert A. Lair, Instructor, Building Trades, Jacksonville High School, Jacksonville, Ill., 188 pp., 147 illus., \$3.75

SEE THESE BOOKS 10 DAYS FREE

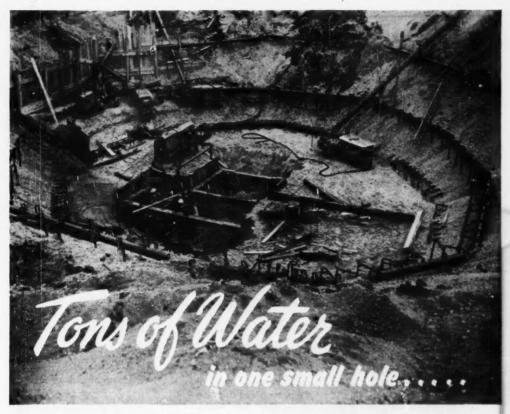
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☐ Lair: Carpentry	.75
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City State Company

This offer applies to U.S. only.



Rock River Generating Station - Beloit, Wisconsin

MORETRENCH WELLPOINTS PUMP 7,000 G.P.M. to keep this small excavation dry. 23 feet of water in very coarse sand and gravel necessitate an unusual number of points to handle the tremendous flow.

For the 4th time in as many years, Cunningham Bros., Inc., Beloit, Wis., depend upon Moretrench Wellpoint Equipment for progress "in the dry."

For pumping efficiency, COUNT ON MORETRENCH!

MORETRENCH CORPORATION

20 West Si 4900 S. Austin Ave. 7701 January Blad 331 W 25th Si 20 January Brad House Brad House Brad New York 6 Change 38 Blade Toronto Standard Regularization Consideration Considerat

5 or 6 INCH AUGERS... drill up to 80 feet 414 INCH AUGERS .. drill to greater depths

Parmanco



NOTE: 3 Jacks for leveling machine. This Parmanco feature insures straight

Eleven years of development have gone into Parmanco vertical drills. Field tests have been made in every type of prospecting and stripping throughout the world.

HEAVY DUTY

Here is a mobile drilling tool, built around a 40 h.p. Ford motor and to user's conditions and requirements. In use today in many

fields, it is speeding and simplifying jobs.

In a recent field test an accurate sample was

taken in 30 minutes thru 25 feet of overburden. This was done adjacent to an identical test hole that had taken 8 days to drill and sample by hand.

This Model 51V has four auger rotating speeds and reverse. It has proved its ability to meet the requirements of the general prospecting field where it is not necessary to drill solid

This machine (Model 51WV) is also built around a Wisconsin 25 h.p. air-cooled motor, 4 speed transmission and self-starter.

PARIS MANUFACTURING CO.

SALES AND SERVICE . . .

ed chairman of the Board of Di-rectors of the Association succeeding Smith W. Storey. Four new directors were also elected—R. D. Raff, president, Diamond Portland Cement Co., Middle Branch, Ohio; Ellery Sedg-wick, Jr., president, Medusa Port-land Cement Co., Cleveland, Ohio; Charles E. Shearer, president, Keystone Portland Cement Co., Philadelphia; and George E. Warren, president, Southwestern Portland Cement Co., Los Angeles.

Compressed Air and Gas Institute: Has been awarded one of the nation's highest honors recognizing the value of trade association services. The nonor referred to is the Award of Merit presented to the Institute in the 1952 ATAE Awards for Distinguished Service sponsored by American Trade Association Executives of Washington, D. C.

Get More Engineering From Engineers

MOST COMPANIES are not getting the best "mileage" from their engineering staffs. And with the present shortage of engineers, it will pay doubly to use them with the utmost efficiency.

Recognizing these facts, the National Society of Professional Engineers has conducted a survey to find how various firms are meeting the problem. Results and recommendations have just been published as "How to Improve the Utilization of Engineering Manpower" (\$2 per copy from NSPE, 1121 15th St., N.W., Washington 5, D. C.).

One of the chief points uncovered is that much of the engineer's time is often taken up in routine tasks that might better be handled by non-engineering personnel, freeing the former for technical work. Among such jobs are drafting, designing, incorporating changes on drawings, collecting and collating data, calculating, making computations, ordinary layout, record keeping and expediting.

In commenting on the serious problem of engineering turnover, the report quotes a company president: "The way for the firm to keep its engineers is to treat them as professional people, pay them adequately, keep them informed, and give them some prospect of professional development. firms who do this are still subject to 'pirating' but to a much less extent than those who regard their engineering employees as expendable material."

Amsco Chains Super-Toughen With Use

How AMSCO Manganese Steel
Chains Acquire Progressively
Greater Resistance to Impact and
Abrasion.

AMSCO Chains are made of Manganese Steel—the "Toughest Steel Known." They are produced in many standazd and special shapes by American Manganese Steel Division—largest producer of manganese steel for all industry. Users of AMSCO Chains benefit by unusual freedom from expensive chain replacement, breakage, maintenance-down-time and other problems caused by impact and abrasion conditions.

AMSCO Manganese Steel Chains have the unique ability to work-harden with use. In rough service, they develop a surface hardness as high as 500 Brinell. They also acquire a super-hard glass-like polish that helps shrug off grinding abrasion. All AMSCO Manganese Steel products—tough when produced—possess the extra-value quality of actually increasing durability with in-use battering and grinding.

Actual case histories prove that AMSCO Manganese Chains outlast ordinary chains by more than 6 to 1 where impact and abrasion exist. For example, on one conveyor operation, ordinary chain had to be completely replaced every three months. When AMSCO Manganese Steel Chain was installed, only a small fraction of the links were replaced during a test period of over 24 months.

of over 24 months.

If you use chain, and desire a more durable alloy, you are invited to contact AMSCO. There's a good chance we can save you money and provide chains that will outlast your service life expectations.





AMERICAN MANGANESE STEEL DIVISION
385 EAST 14th STREET - CHICAGO HEIGHTS, ILL.

Foundries at Chicago Heights, III.; New Castle, Del.; Denver, Colo.; St. Louis, Mo.; Los Angeles, Calif.
Offices in principal cities. In Canada: Joliette Steel Limited, Joliette, Quebec.

4-Cycle Air-Cooled

KOHLER ENGINES



Kohler Engines provide reliable power for a wide range of uses. Compact, quick-starting. Engineered and built to the high standards that have won world-wide acceptance for Kohler Electric Plants in construction and other industries. The Kohler mark has been identified with quality products for over three-quarters of a century. Write for information on distributor's sales franchise.

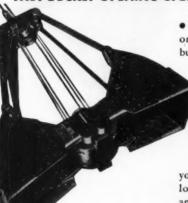
Kohler Co., Kohler, Wisconsin, Established 1873

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PLUMBING FIXTURES . HEATING EQUIPMENT . ELECTRIC PLANTS AIR-COOLED ENGINES . PRECISION CONTROLS

WELLMAN Williams Type

FAST BUCKET OPENING SPEEDS OPERATIONS



 Double-hinge construction on Wellman's multiple-rope bucket permits faster opening than a single hinge. This speeds up operations, also gives a bigger spread in the open bucket for the same

Wellman's weldeddesign buckets offer you better performance and longer service. In all types and sizes you'll do better with Wellman!

headroom.

Want Facts?

CLAMSHELL - DRAGLINE - CUSTOM-BUILT SUCKETS - STONE AND WOOD GRASS

THE WELLMAN ENGINEERING COMPANY

7000 Central Avenue Cleveland 4, Ohio

Weld Cast Iron Pulley...



REPAIR OF CAST IRON PARTS long has been classified as one of the more difficult arts, even when correct materials are used and a precise procedure is followed. Nowadays the job has been simplified greatly, thanks largely to improved materials.

The Eutectic Welding Alloys Corp. of Flushing, N. Y., brings us good news on this subject through the description of a recent repair job that prevented a one-week shutdown of a busy plant—at a cost that was a mere fraction of the loss of the threatened shutdown.

A main bearing on a rock crusher burned out, causing the shaft to drop. The sudden impact cracked five of the six spokes of the cast iron multiple V-belt drive pulley on the shaft, two of them being cracked at both ends. The parts supplier informed the company that at least seven days would be required to ship in a new pulley casting.

Welding was decided upon, to avoid a plant shutdown. The company welders agreed that the job could be done, provided a new technique of welding the casting "cold" was employed. Normally, preheating of the casting would be required to prevent further cracking, and these facilities were not available.

First, the cracks were "veed" with Eutectic ChamferTrode, an oxygenless electrode coated heavily with a special heat-resisting flux which is consumed at a slower rate than the core. It forms a tube through which concentrated heat energy is directed. Oxygen is not necessary because the force is so great that the unwanted metal literally is blasted from the path of the electrode.

The welder was set at 300 amp, and an arc struck on a piece of

... Prevent Plant Shutdown

1

scrap metal. The arc was transferred to the casting, and vees of correct dimensions quickly obtained. Preparation of the cracks in this fashion was accomplished in a fraction of the time that would have been required by a grinder and a clean, ideal welding base resulted.

Then the amperage was changed to 100 on reverse polarity, a 5/32-in. Eutectrode 24X substituted in the electrode holder and welding began. The special electrode chosen has a high affinity for cast iron, it can be laid on at low heat and fairly smooth, deposits obtained.

Veeing operations had heated the casting to about 200 deg F, and each crack was clean because the searing effect had burned the oil out of the oil-impregnated metal.

Skip welding was employed to hold heat buildup to a minimum and avoid cracking, warping and embrittlement. A short arc was maintained, and stringer beads about 1 in. long were laid down. Fach bead was peened to relieve residual stresses.

The pulley was kept at a comfortable hand heat throughout all operations. Beads were deposited upon one spoke and then on a crack in the opposite spoke. Then the pulley was reversed, and the same procedure followed. This prevented spot heat buildup.

A coating of flux on the special electrode assisted in alloying of the surface metal by flowing ahead of the deposit and preparing the cast iron. The arc was directed upon the deposit at all times and cracks prevented by smothering the arc on metal deposited previously. This eliminated a shallow weld puddle crater which often shows crosschecks due to a lengthening arc.

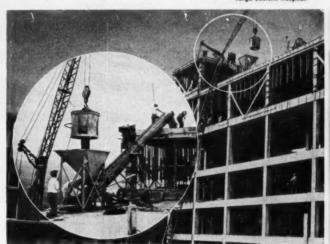
Production had to be halted for one shift only and following the successful repair, the order for a new V-belt pulley was cancelled. It was felt that the welded pulley wheel was stronger after repair than it had been before the accident.



One in a series of factual reports from owners of Farquhar Conveyors

FARQUHAR CONVEYORS SAVE TIME AND LABOR IN POURING CONCRETE*

* during construction of



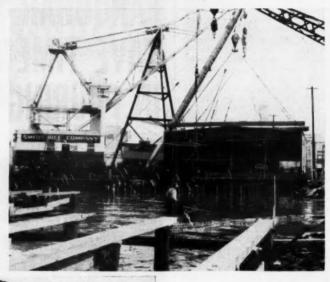
DURING construction of a large eastern hospital, the contractor installed this Farquhar Trough Conveyor to speed delivery of wet concrete. Carrying the concrete directly from the mixer truck to the pouring operation, the Conveyor saved time and money for the contractor . . . and hard, back-breaking work for his men!

Whether you move coal, gravel, sand, aggregates, cartons, boxes, bundles, bales, or any kind of bulk or packaged materials—horizontally or from floor to floor—Farquhar can cut your handling costs to rock bottom! One or more of the complete line of Farquhar portable, semi-permanent, and permanent conveyors will solve your handling problem. Our engineers will be glad to consult with you . . . at no obligation!

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CONVEYORS	City	Zone State			

Lift Warehouse Halves Across Water

CABLES TIGHTEN as two floating cranes lift the second half of a 110x65ft waterfront warehouse in Emeryville, Calif., on San Francisco Bay. The big wooden structure is being "air lifted" approximately 300 ft over shallow tideflats to make way for a heavily traveled approach to the San Francisco-Oakland Bay Bridge. The building had been supported on wood piling and was transferred to a similar foundation. To speed the moving, the warehouse was sawed through the middle and each half (weighing about 100 tons) moved separately. The interior of each section was cross-braced and reinforced thoroughly. Heavy timbers were laid over the floor and protruded from each side of the building. They were tied in to the substructure. Overhead, spreader pieces were tied to the bottom lift beams by vertical cables for a balanced support.





FIRST HALF of the big structure has been moved and is resting on its new wood-pile foundation on the waterfront. One of the large lift timbers still is in position across the warehouse floor where it had been tied into the substructure. The first section was moved without incident, but the second half caused some delay when it was discovered that one end was tailheavy. The extra weight was due to-aheavy apron used normally to transfer shipments to and from barges drawn up alongside. The apron was removed and the move completed without further delay.

CUT-OFF POINTS show clearly as structure is prepared for move across the water. Vertical black line in center of picture, adjacent to building corner, shows where adjoining shed has been cut loose from warehouse. Plank floor of entrance apron is pulled up to permit separation of substructure members. Warehouse is owned by Pabco Products, Inc. General contractor is Peter Kiewit Sons' Co. who substruction Co., San Francisco.





GREEN STRAND Assures Top Quality



What Contractors Say About It...

"Shock loads, abrasion, and continuous bending are the factors that make it necessary for us to get the best wire rope for our equipment. Our ropes get rough, tough treatment."

"We know HAZARD Lay-Set <u>Preformed</u> improved plow steel wire ropes are the result of a good many field tests. They started them many years ago and have never stopped. It must be monotonous, but that's the way HAZARD does it."

"HAZARD is the best wire rope you can use—that's for sure. We know that from our own experience. LAY-SET <u>Preformed</u> comes in the different constructions we need on the different machines we operate. Like the salesman says, you can tell it at a glance by the green strand."

Be sure of the wire rope you buy. To get longer wear and lower service cost, get HAZARD Lay-Set <u>Preformed</u>, the Green Strand wire rope.



ON DRAGLINES



ON BACKHOES



ON SCRAPER



Registered
WIRE ROPE



7

2

HAZARD WIRE ROPE DIVISION AMERICAN CHAIN & CABLE

Wilkes-Barre, Pa., Chicago, Denver, Houston, Los Angeles, New York, Odessa, Tex., Philadelphia, Pittsburgh, San Francisco, Bridgeport, Conn.

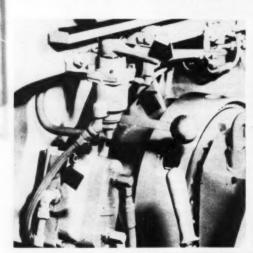
CONSTRUCTION EQUIPMENT NEWS



High Flotation Off-Highway Tires Have Positive Traction in Sand

Loamy soil, like that pictured here, presents a severe test for big tires, but B. F. Goodrich Co.'s new "Earth-Movers" don't seem to be affected much by it. The new tires are 65-inchers, with wide base and 18-ply, all nylon. Under test for the last two years by R. G. LeTourneau Co. at two of their proving grounds, they operate at

pressures from 20 to 25 psi. Since this is unusually low pressure for heavy equipment tires, a specially designed tapered bead seat prevents slippage on rim. According to the manufacturer, the shallow type tread, instead of digging in and bogging down, keeps rolling because of its high flotation.—B. F. Goodrich Co., Akron, Ohio.



Crane Air Lines Are of Flexible Metal

On Unit Crane & Shovel Corp.'s \$357 mobile crane, flexible metal hose carries compressed air from a reservoir tank through two-way brake and transmission control valves (arrows) to front and rear axle brake pistons and two-speed air-operated transmission. After months of testing, they've been found to withstand extremely well the vibrations set up by the rig when in use. Titeflex Inc., 500 Frelinghuysen Ave., Newark 5, N. J.



Roof Insulation Prevents Blistering

Channel-Seal roof insulation features a special bevel on the four deck-side edges of each unit. When units are applied, a network of triangular channels is formed between roof deck and insulation, protecting against localized pressure build-up, with consequent blistering or separation of felt from insulation. Sizes are 24 and 48 in. square; thickness, 1, 1½ and 2 in.—The Celotex Corp., 120 S. La Salle St., Chicago 3, III.

On-the-Job Previews of Machinery, Tools and Equipment



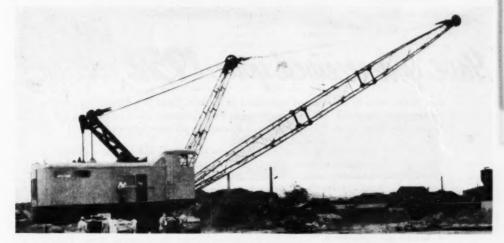
Side Dozer Cleans Under Guard Rails

The Huber Maintainer now sports a side dozer which reaches right under guard rails and fencing to scalp berms and shoulders which up to now had to be done by hand. Blade is 48x6x½ in., and has 6-in. clearance Maximum dozer reach is 72 in., and it weighs 520 lb.—Huber Manufacturing Co., Marion, Ohio.



Rooter Shank Fits on All 'Dozer Blades

A bulldozer operator can rip, root and doze at the same time with the new ESCO tooth shank housing which mounts on any bulldozer with clamp, adapters and/or saddles. The shank has four adjustments of rooter depth below dozer cutting edge and has replaceable teeth.—Electric Steel Foundry Co., Portland 10, Ore.

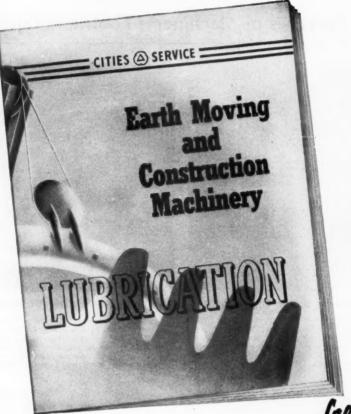


P&H 300-Ton Dragline Can Handle 8-Yd Bucket at End of 120-Ft Boom

Reportedly the largest dragline ever mounted on a single pair of crawler frames, Harnischfeger Corp.'s new model 1855 was demonstrated to a group of contractors at the company's Milwaukee plant recently. Those who witnessed the demonstration were particularly impressed with the machine's four separate Magnetorque units which control all operations of the 8-yd giant. Digging, hoisting, swinging and even propelling movements are

governed by the electro-magnetic controls which have eliminated friction clutches entirely.

The magnetic pull which replaces mechanical friction transmits power without any mechanical linkage or wear; thus shock loads are eliminated. The heavy-duty dragline has a working weight of 600,000 lb and can handle an 8-yd bucket on a 120-ft boom or a 7-yarder with (Continued on page 129)



Have you received your 1952, edition?

FOR YEARS, men in construction and allied fields have found this lubrication book tremendously helpful. It not only discusses the basic fundamentals of lubrication, but it gets right down to specific lubricating techniques for all your equipment.

Proper use of the practices outlined in this book, plus the full line of Cities Service Quality Lubricants can:

- Lengthen the life of your equipment.
- Increase productivity.
- · Speed up operation.
- · Save on operating costs.

If you're the boss and owner, it protects your investment, increases profits and simplifies your operations. If you're working for the boss, proper use of this book will help you on the job. Write now for your 1952 edition of EARTH MOVING AND CONSTRUCTION MACHINERY LUBRICATION, CITIES SERVICE OIL COMPANY, DEPT. L39, Sixty Wall Tower, New York City 5.

CITIES (SERVICE

CONSTRUCTION EQUIPMENT NEWS . . . Continued from page 127

150-ft. boom. Power comes from an 8-cyl Cooper-Bessemer FV8 diesel which develops 590 hp at 900 rpm.

Top of the cab is 19½ ft, distance from ground to bottom of counter-weight is 5½ ft. Ground pressure is 16.2 psi and over-all width of crawlers, with their 60-in. wide shoes, is 22½ ft. Crawler length is 29 ft.

Other important data on the 1855 hoist line speed of 246 fpm, digging line speed of 199 fpm, hoist-line pull of 75,600 lb and digging-line pull of 93,500 lb. Traveling speed is 0.5 mph and rotating speed reaches 3.54 rpm. The first model, pictured here, has been purchased by Wingert Contracting Co. of Butler, Pa, for use in coal stripping operations at Sligo, Pa.—

Harnischfeger Corporation, Milwauker, Wis.



TRANSIT-LEVELS-C. L. Berger & Sons, Inc., of Boston made a survey recently among builders and contractors to determine their needs in transits, levels and other measuring devices. Many confirmed the thinking of the company, saying that they were willing to sacrifice extremely high precision-unnecessary in many building phases-for an instrument that had the degree of accuracy that their work required, and at a comparatively lower price. The result was recent announcement of Berger's "N" line of four moderately priced instruments. One of them is the Convertible transit-level above. The "N" line includes, as well as the Convertible, a heavy-duty 12-in. level, a service transit-level and a hand-level. Each is constructed of brass and bronze, like their more expensive counterparts. Appearance of the "N" line in no way affects production of Berger's high precision line. Descriptive booklets, giving complete speci-fications on the "N" line, are available from C. L. Berger & Sons, Inc., 37 William St., Boston 19, Mass.

7

5



LARGE CAPACITY IN AN 8 FT. DECK WIDTH—LEGAL IN ALL STATES. 8 TIRES ON 2 ROCKING STUB AXLES WITH LEVEL OR DROP DECK IN 15, 20, 25, 30 and 35 TON CAPACITIES

By reason of its versatile adaptability to all kinds of heavy hauling jobs, the Rogers Type "T" has steadily increased in popularity.

It's a "natural" for small and large contractors and haulers. If you are considering the purchase of one or more trailers, by all means investigate the Type "T".

It packs powerful advantages in a multi-purpose single unit. Write for full details and catalog.



A worms-eye view of the sturdy rear end and frame construction of the famous "T".

The rear end design of the Type "T" has proved so efficient it has been adopted as standard construction in Rogers Power-Lift Detachable Gooseneck Trailers.



220 Orchard Street



Also of timely interest is this ROGERS Tag-A-Long trailer which makes a dump truck serve as a tractor and effects sizeable savings for contractors.

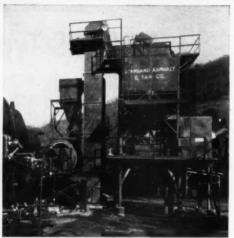








PA-20 HOT MIX ASPHALT PLANT



Easily Portable by Truck . . . Efficient on Small as well as Big Jobs

H & B PA type plants are designed especially for the contractor who moves frequently, and who must be able to get efficient production on small as well as large jobs, under a wide variety of operating conditions.

PA plants are particularly adapted for moving by truck and trailer. If desired, the dryer and the mixing-weigh unit can be furnished with tandem axle and fifth wheel. These plants may be driven with individual electric motors or from one main power unit for the tower and one for the dryer. Gasoline, diesel, diesel electric or electric power may be used.

All PA plants are completely assembled and checked before shipment. See your local H & B distributor, or write for Bulletin P-46.



MOTO-PAVER

does the complete mixing and paving job in one continuous operation. Ideal equipment for resurfacing work. Ask for Bulletin MP-49.

HETHERINGTON & BERNER INC.

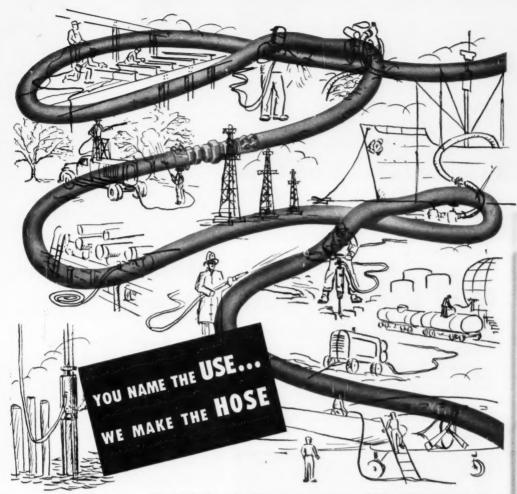
Engineers . Manufacturers

735 KENTUCKY AVENUE - INDIANAPOLIS 7, IND.

PORTABLE ELECTRIC SAW-The photos here show only three of the hundreds of applications to which contractors can put the Sawzall, a lightweight, reciprocating electric saw that's a self-contained unit—not an attachment. The figure above left shows how it can zip through corrugated Transite sheeting, just as it does through wood, Masonite, Formica, galvanized sheet, wire nails and the like. Center photo illustrates the ease with which it can cut through curves or irregular shapes and the photo above shows how it isn't even slowed down by nails and crate straps. This latter application leaves all nails cut clean, with no protruding edges; what's more, the boards are free from splinters, breaks and gouges which even the best nail pullers leave. The 110-v universal-type motor is equipped with lifetime-lubricated ball, roller and anti-friction bearings. All windings are of special, heat-resistant wire, multiple-insulated and provided against overload conditions. Housing is of rigid, die-cast aluminum; a mul ti-blade fan provides maximum cooling efficiency; hardened steel helical gears give smooth, quiet performance with less wear and greater working power. UL-approved starting switch is lockable for continuous running. The machine needs no starting hole for cutting sleeve openings, etc. The operator merely holds the tool against material, using edge of the shoe guide as a fulcrum. Then he squeezes the starting trigger and bears down on the nose of the unit to bring the reciprocating blade tip into contact with the work .- Milwaukee Electric Tool Corp., Milwaukee 8, Wis.

Correction

IN THE NOVEMBER ISSUE OF CM&E, on page 160, appeared an item describing a newly designed safety can—manufactured by the Eagle Manufacturing Co.—for the handling, transportation and storing of gasoline and other flammable liquids. In error, the address of the manufacturer was listed as Wellsburg, Va. The correct address is Wellsburg, W. Va.



Our Condor Homoflex Hose is an example . . . Raybestos-Manhattan engineers found a way to build strength into a hose-wall without simply adding weight and thickness in more plies. The result, this Hose is flexible as a rope . . . and a real labor saver wherever men must constantly work with hose. On the other hand, Raybestos-Manhattan makes the world's largest and beaviest hose for oil drilling and loading, and for suction * Hose may not be your problem today, but whenever you think of industrial rubber products . . . transmission, conveyor, V-belts, or hose . . . remember R/M engineers have developed exclusive features to give you more for your money in every use. Consult your R/M representative.

L

MANHATTAN RUBBER DIVISION - PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.







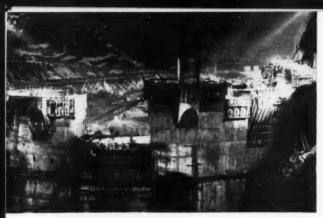








Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Packings • Brake Linings • Brake Blocks
Clutch Facings • Asbestos Textiles • Sintered Metal Parts • Bowling Balls

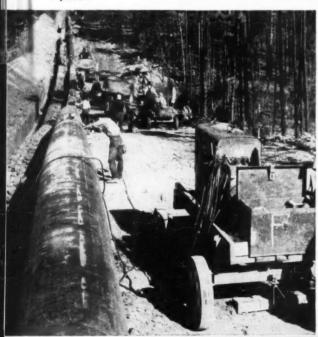


TYPICAL MASSIVE JOB, lighted for night work, is 220,000-kw hydro development in Idaho. Dam is 208 ft. high, crosses 600-ft. gorge. On big jobs, taking years to complete, "specs" stay open to permit changes. Hence, selling must continue throughout.



M-K SUBSIDIARIES work in Alaska and 14 foreign countries from Afghanistan (above) to New Zealand. Most supplies and almost all equipment are bought Stateside but vary widely with locality.

1,005 MILES OF PIPELINE through Mississippi, Louisiana, Texas are laid in 30-ft, welded sections. Fast-moving job means big logistics problem.





\$234,000,000 OF CONSTRUCTION was completed by M-K in U. S. in 1951. Foreign subsidiaries added \$82-million more. Work was handled under 151 separate contracts. New business contracted for in 1951 totalled \$471.8-million. Backlog of \$361,000,000 was carried into 1952. M-K last year paid \$78,000,000 in construction wages to workers in U. S. alone.

\$156,000,000 Spent On Equipment, Materials, Services Last Year By Morrison-Knudsen Co.

Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho, one of the nation's largest contractors, last year spent \$156-million for materials, equipment, and operating expenses, including almost every conceivable product and service.

Here is how this big customer spends its money. Whether M-K buys from you now, or is just a gleam in your eye, you can use these facts to guide your selling.



MORRISON-KNUDSEN OWNS 290 tractors, 110 scrapers (in U.S. and Alaska alone), 116 crane-type excavators, 896 trucks and trailers, 131 compressors, 57 concrete mixers. M-K parent company bought \$6.6 million in new equipment last year, now owns \$22.3 million. More is rented as needed. Equipment buying is centralized with field reports a strong influence. During 1951 M-K "fleet" used \$2,000,010 in fuel, grease, oil; \$216,823 in wire rope.



74 INDIVIDUAL PAID SUBSCRIBERS in 38 locations in 14 states get Construction Methods and Equipment every month in M-K domestic organization. Subscriptions go to 37 job titles including president, three vice presidents, 11 foremen, 19 engineers, master mechanic, equipment superintendent, cat skinner.



JOINT-VENTURE CONTRACTS are often entered by two or more firms for best use of men and equipment on big or unusual jobs. Normal buying practices go out the window. Above is Alaska Highway and railroad built by M-K and two associates.



BIG QUANTITIES OF CONCRETE ON A JOB require screening plant (foreground) and mixing and refrigeration plant (far side of stockpiles). This is investment of half to one-and-a-half million dollars depending on capacity, complexity. Much of aggregate is produced at job site.

The secret of selling an outfit like Morrison-Knudsen is to keep in constant touch with buying influences at all jobs, on all job levels. Each month, over 30,000 buying influences pay to read Construction Methods and Equipment. And they read it thoroughly, both advertising and editorial, as proved each month by Readex Reader Interest Reports.

Remember, Morrison-Knudsen is only one of 1,908 construction companies that each received contracts worth more than a million dollars in 1951. And 4,830 other contractors were awarded contracts for more than \$100,000 apiece.

Your CM&E salesman can give you more facts on these major construction customers — who they are, where they are, what they do, and how to reach them. Call him now, for facts to guide your selling.

CONSTRUCTION

METHODS AND EQUIPMENT







VARIABLE - SPEED MOTOR - A new lightweight Varidrive motor, in fractional horsepower, is available with mechanical remote control. This control feature includes a hand wheel with indicator dial and a 5-ft flexible cable, so that the machine operator can control the Varidrive's speed at a distance from the motor. An advantage of this control arrangement is that the dial indicator is a part of the control, making it unnecessary to go to the motor to see what speed is being "revved up." A connecting cable longer than 5 ft can be used, if necessary. Type 5 VA Varidrive has been made available in 1/4, 1/3, 1/2 and 3/4 hp and in a speed ratio up to 10:1 over a range of 4:10,000 rpm.—U. S. Electrical Motors, Inc., Box 2058, Los Angeles 54, Calif.



CONCRETE FORM CLAMPS — By driving home a wedge with a hammer, a form carpenter is able to grip one timber at any point while wedging another into a non-slip position. These one-piece malleable castings have no assembly parts, need no nails to pin and later pull, and are particularly easy to strip. They've been designed to hold on inside corners, outside corners, columns, panels and beam sides. For further information write to Neptune Mg. Co., 3250 E. Olympic Blvd., Los Angeles 23, Calif.

VOLTAGE-CHECKING TESTER-A combination of advantages and safety features has been built into a new tester that can be used for checking electric circuits, spark plugs, motors, fuses, and a variety of electrical equipment. Capacity includes voltages from 80 to 600, ac or dc. Called the "Test-Glo," its safety features include: 24-in. lead wire between test prods, 5-in. prod handles for deep probing; safetyrings on prods to prevent fingers from contacting tips; 10,000-v lead wire; high-grade resistors between each prod; neon lamp at front of prod in line-of-vision; all parts sealed against moisture.-Ideal Industries, Inc., 4102 Park Ave., Sycamore, Ill.

ROGKRATED

FOR ROCK BOTTOM COSTS

PaH MAGNETORQUE

puts an end to the old swing frictions

We'll make this promise: You'll never have to "baby" this machine, even in the heaviest going! It's built for it — all-welded of alloy steels throughout, the toughest construction known. It means steady digging.
But the big pay-off in extra

But the big pay-off in extra production comes with Magnetorque electric swing — enough faster to deliver 5 cycles to 4 on other machines in the 2½ yd. class. And the "time-outs" for adjustment and replacement of swing friction linings can now be salvaged for increased yardage. Magnetorque lasts the life of the machine.

*T.M. of Harnischfeger Corporation for electro-magnetic type clutch.

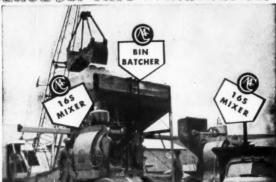
HARNISCHFEGER

CORPORATION

4400 W. National Avenue • Milwaukee 46, Wis.

Ask today for facts about the 955-A. Also the Model 1055 — its companion machine with 3 ½ yd. capacity.

You can't beat this combination



It's double speed ahead <u>now!</u>

(AE)

Here's a portable Central Plant that amazingly reduces pouring costs. It's CMC 165 mixers in tandem with CMC two-bin BIN-BATCHER. When you buy select CMC equipment you get the best. Every piece of CMC equipment is built to take the punishment of long service! Write today for latest catalog.

MIXERS—PUMPS—HOISTS—SAWS

READY FOR YOU...REPRINTS ON

EARTHMOVING

The first comprehensive book on this important subject ever published

The series of articles entitled "Earthmoving . . . An Art and a Science", published in Construction Methods and Equipment during 1951 and 1952, has been assembled under one cover to satisfy the scores of requests for such a book. Extra copies are available.

Here are 64 pages of valuable excavating and earthmoving data, prepared by authorities in their field, useful to contractors, estimators, foremen and operators for years to come.

CONSTRUCTION

METHODS AND EQUIPMENT

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REDESIGNED EXHAUST CAP—No collars; clamps or bushings are needed to install the new Cancap vertical exhaust pipe protector. A malleable mounted bracket (Fig 3) simply slips over the pipe and is held by a cadmium-plated set screw. The cap (Fig 1) is cast from lightweight aluminum alloy, fused around the top of a malleable tear-shaped hinge (Fig 2) affording extra lightness to open with first puff of exhaust. Smallest size fits pipe from 1% in. to 2% in. —and four other sizes fit pipes up to 5 in. O. D.—Canton Cast Products Co., Canton 9, Ohio.



PAINT-REMOVING TOOL-A new type electric paint remover, designed to remove paint quickly and eco-nomically through the use of radiant heat, has been announced by the Industrial Heating Department of the General Electric Co. Developed for both professional and home use, the new unit consists of two skids under which is mounted a G-E Calrod tubular heater rated at 1,000, 115 v. When the device is slid along a painted surface, heat from the Calrod unit causes paint to soften and blister so that it can be removed with a putty knife. The skids are said to keep heat a safe and constant distance from painted surface while two metal reflectors keep the plastic handle cool at all times. The complete device, to be sold through Sherwin-Williams paint stores, weighs 21/4 lb, is 61/2 in. long and has an 8-ft heavy duty electric cord.-General Electric Co., Schenectady 5, N. Y.

2

Only the Cleaver-Brooks "Deuce" gives you this DUAL-DUTY performance in one operation

Here's the answer to fast, low-cost heating of pumpable bituminous material—in one compact mobile unit, easily moved to location with one motor truck. Heats and transfers bitumen 4 times as fast through the direct oil-fired pumping booster.

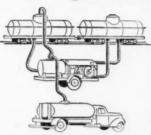
In addition, you have a fast steaming, economically operating tank car heater. A combination unit that offers substantial savings as compared to purchase of two separate units.

Over 10 h.p. 125 lb. W.P. oil-fired, four-pass, horizontal fire tube boiler — ASME code constructed and so stamped, conforming to all State and Local Codes, equipped with condensate system mounted together with direct fired pumping booster on single sturdy frame — skid mounted or 2-wheel trailer mounted. Write for further information.

CLEAVER-BROOKS COMPANY, Dept. P, 398 E. Keefe Ave., Milwaukee 12, Wis.

2

2



- 1. Steam preheat to pumpable consistency
- 2. Circulate and Heat to application temperature
- 3. Pump and load distributor

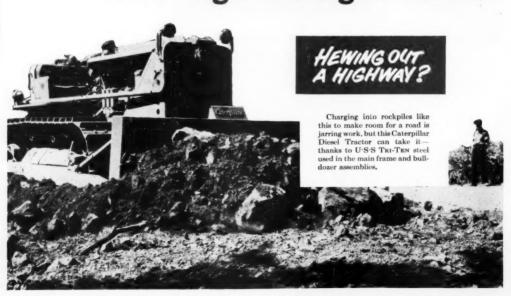
Not one, not two, but three Jobs can be done with the Cleaver-Brooks "Deuce" a Combination Tank Car Heater and Pumping Booster. You can steam preheat one car to pumpable consistency while you are circulating and besting a second car to application temperatures. And, with this same unit you can then pump and with this same unit you can then pump and





The Thew Shovel Company, maker of Lorain Cranes and Shovels, has long used U.S-S HIGH STRENGTH STEELS to build ruggedness and durability into their equipment.







cut costs-improve performance

FOR any job anywhere, U·S·S HIGH STRENGTH STEELS give your equipment more "delivery" power. You have far fewer breakdowns, lower maintenance and replacement costs.

Hundreds of case histories prove this. When U·S·S Man-Ten, U·S·S Cor-Ten or U·S·S Tri-Ten steels are used in place of carbon steel, you save money and you do the job better and quicker.

These famous "steels that do more" permit you to build maximum strength and toughness into parts ordinarily prone to failure. With them you can incorporate high resistance to fatigue, wear, abrasion and impact. And if your equipment must operate in sub-zero temperatures, or under corrosive conditions,

you can provide high resistance to these destructive

And here's another big advantage. U·S·S HIGH STRENGTH STEELS have a yield point 50% higher than ordinary structural steel. That means you can materially increase the strength of parts without increasing their weight. Or you can use lighter steel sections and reduce weight while retaining the same strength factors as you had before. In the latter case, substantial savings in steel will result.

Contact our nearest office. Our engineers will show you exactly how you can use U·S·S HIGH STRENGTH STEELS to make your equipment last longer and do more.

UNITED STATES STEEL COMPANY, PITTSBURGH - AMERICAN STEEL & WIRE DIVISION, CLEVELAND - COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
NATIONAL TUBE DIVISION, PITTSBURGH - TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA. - UNITED STATES STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, REW YOUR WARNE STEEL SUPPLY DIVISION, WAREHOUSE DISTRIBUTORS

U·S·S HIGH STRENGTH STEELS

2-2129

UNITED STATES STEEL



Here are good points to remember when it comes time to replace clutch and brake friction materials on your machines . . .

By far the majority of earth-moving machine manufacturers choose Johns-Manville Industrial Friction Materials. That's not surprising, actually J-M Friction Products have set records for long service and low-cost operation. They are *engineered* for the job—specially formulated for trouble-free performance and maximum working life.

And Johns-Manville's rigid manufacturing and inspection controls provide real insurance of uniformly high quality.

If you want to be sure that your own equipment will continue to give the excellent service built into it—take a tip from the machine maker. Replace only with genuine Johns-Manville Friction Materials.

Write for your copy of "Johns-Manville Industrial Friction Materials" FM-12A. It contains a wealth of important application and performance data. Address: Johns-Manville, Box 60, New York 16, New York.

Johns-Manville INDUSTRIAL FRICTION MATERIALS

No. I With Leading Manufacturers



FRENCH DIESEL PILE HAMMER A French-manufactured diesel pile hammer is being introduced in this country with claims of significant advantages over steam hammers in portability, efficiency and economy of operation. Basically a free-piston diesel ram engine, the hammer has a 1,150-lb cast-steel piston moving within a cylinder of steel tubing to hit a forged steel striking head. At starting, the piston is raised by a hand winch to a point where a catch is fastened. After it is tripped, the piston falls freely, tripping a rod to actuate a fuel pump which injects fuel into the working part of the cylinder. Air is violently compressed in the chamber, atomizing the fuel. The air-fuel mixture heats and detonates, and the resulting power exerts downward pressure on the striking head and simultaneously forces the piston back up for the start of a new cycle.

The piston has an adjustable stroke between 4 ft and 6 ft 7 in. It delivers between 4,500 and 7,500 ft-lb of power at 50 to 60 strokes per min. The hammer consumes 0.78 gal of fuel per hr. Straight diesel oil is used except at atmospheric temperatures below 59 deg F, when a mixture of 85% oil and 15% kerosene is recommended. Developed in 1951 by the Germans for combat use, the hammer was taken over by a French group after the war, improved, and since 1948 has been manufactured by the M.T.P. Co., of Paris. Distribution in this country is by the M.T.P. Co. of America, 14031 Huston St., Sherman Oaks, Calif.

DIVIDED-DECK. GOOSENECK-TYPE TRAILER—The latest Rogers trailer is a divided-deck, gooseneck-type which has a longer deck to carry heavier loads of greater area. This divided deck is so well balanced as to be tipped or returned to the traveling position by the weight of one man. A double-acting hydraulic ram checks and cushions the upward and downward movement of the deck.—Rogers Bros. Corp., Albion, Pa.

digging ditches to blueprint specifications



Using special bucket built by owner, Gradall digs and trims irrigation ditch, eliminating hand finishing.



Along busy highway, Gradall accurately cleans slope, digs ditch, and loads spoil, all in one operation.

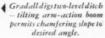


TO MATTER WHAT TYPE DITCH IT IS, the Gradall will dig it with the accuracy of hand labor-but at much less cost!

Gradall has proved itself a time and labor saver on many different types of ditching jobs-following the special contours of ditches along railroad right-of-ways, along highways, in extensive irrigation projects - anywhere precision work is required.

By power hydraulics, the Gradall exerts a positive down pressure, rather than depending upon the weight of the bucket for its cutting action. And its "arm-action" boom twists and turns to cut slopes at any desired angle -to work easily around obstacles. Its mount permits a 360° swing to load or waste spoil. And many standard and special tools can be easily interchanged in a matter of minutes.

Contractors, officials of utilities and municipalities, and highway men alike are enthusiastic over Gradall's clean, finished work - done exactly to "specs". But see for yourself - Contact your Gradall Distributor for a field demonstration.





Gradall Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY



NASSAU DOCKS, INC.
REORDERS HELTZEL BINS
Often empties over
3 bins per hour

PROBLEM: To have overhead storage of 11/2", 3/4", 3/6" stone and run-of-crusher limestone screenings which are delivered in barges; to fill and empty the bins quickly into trucks having 14 to 16-yard capacity; to deliver aggregates in proper proportion from the same bins to an asphalt plant on a conveyor belt. These were the Nassau Docks, Inc., problems.

SOLUTION: Nassau Docks, Inc., ordered four 18-foot diameter, 150-ton capacity Helizel bins, and at a later date, six more. A two and one-half yard clam-shell loads the bins. For discharging, double-acting clam-shell gates (16" x16") operate from the ground level. During busy days at Nassau Docks, three or more bins are emptied per hour. The superintendent says that any one of 4 aggregates, or any combination of them, can be moved on the conveyor

Nassau Docks, Inc., furnishes aggregates for its own asphalt plant, for contractors and Hendrickson Brothers, with whom Nassau Docks is allied. Specialized Heltzel engineering features circular and square bins; 50-degree sloping sides of cone; α choice of clam-shell, single arc or roller gates ranging in size from 12" x 12" to 30" x 30" which are air or manually operated.

belt to the asphalt plant.

Ease of assembly is testified to by steel erectors time after time. Heltzel has solved hundreds of similar problems effectively; so why don't you write regarding your storage, loading, mixing, unloading, batching or materials handling problems?



IMPROVED SAFETY SOLVENTS Orthosene, Per-Trolene and Frigisol are safety solvents for electrical, mechanical and metal parts degreasing. All three have been designed to replace carbon tetrachloride and are claimed to be marked improvements over safety solvents heretofore available. Orthosene is a slow-drying solvent with a high flash point. It has excellent degreasing qualities and is said to leave no residual oily film. Per-Trolene is a rapid-drying solvent, with a flash point of 140 deg F. It is designed for wide application in electrical and mechanical maintenance shops where drying and exceptional degreasing qualities are needed. Frigisol is also a rapid-drying safety solvent, similar in many qualities to Per-Trolene, but also capable of displacing water. It has a flash point of 235 deg F which makes it applicable to many spot locations where lower flash solvents might present fire hazards. The safety qualities of all three solvents have been improved by eliminating toxic inhibitors, as well as harmful isomers normal to some chlorinated

products .- John B. Moore Corp.,

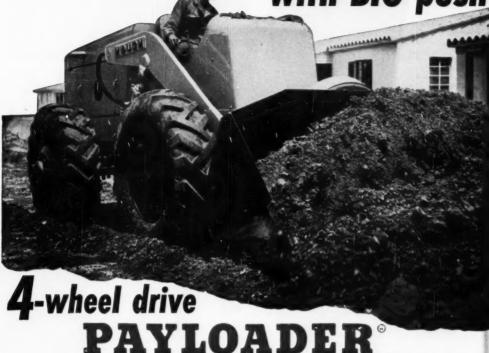
P. O. Box \$3, Nutley 10, N. J.

PAYLOADER TRACTOR-If you picture the Hough TM "Payloader" with its front-end bucket replaced by a huge steel push plate, you will have a good idea of the makeup of the new Payloader tractor. Like the regular Payloader, it has full reversing transmission which provides four gear ratios in both forward and reverse; speed up to 27 mph; a torque converter drive in addition to a friction clutch; rear wheel steer with hydraulic power booster; 16.00-24 tires all around. The new rubbertired tractor is available with either a 106-hp gasoline engine or a 90hp diesel engine, which develops up to 16,000- and 14,000-lb drawbar pull, respectively. Total weight is 25,000 lb, and the unit is recommended for heavy-duty drawbar and pushing work, both on and off pavement. It makes a flexible, efficient railroad car switcher and spotter. The big earthmover tires walk readily over ties and across tracks, and the torque converter assures precise control for careful spotting and slow, steady application of power for starting heavy loads.—The Frank G. Hough Co., Seventh St., Libertyville,



1

BIG Tractor-shovel with BIG push



Contractors and Public Works men are happy with the big Model HM 1½ yd. "PAYLOADER" because of the combination of power, mobility and versatility it gives them — power and 4-wheel traction to get big production even when ground conditions are poor . . . mobility to get from job to job quickly at speeds up to 16 m.p.h. . . . versatility to dig, load, grade, bulldoze, spread, pull and push

This tractor-shovel also makes a hit with operators because it rides easy and has a big comfortable seat, power-boosted steering and fingertip hydraulic control.

Four speeds reverse as well as forward permit as fast operation in both directions as the job conditions allow, and there's a choice of gasoline or diesel power. Once you've seen a Model HM in action you'll understand why hundreds of owners and operators are its enthusiastic boosters.

The Frank G. Hough Co., 706 Sunnyside Ave., Libertyville, Ill.



V/RITE for catalog on the 1½ yd. Model HM or the six other "PAYLOADER" sixes down to 12 cv. ft. bucket capacity.



... to work on or off pavement.



AN AIRCO HARDFACING PROGRAM --

with periodic equipment "check-ups"—can materially reduce overhead on virtually every construction operation!

Take manganese bucket teeth, for example... you can extend the life of these normally expendable items by as much as six months—with a single alloy application!

AIRCO HARDFACING saves dollars wherever equipment is subject to abrasion... impact... heat... and corrosion. Airco alloys (more than 20 in all) may be applied by electric arc or oxyacetylene flame — right on your premises. Special problems? There's an alloy for every type of equipment and every wear problem!

AIRCO HARDFACING extends the life of irreplaceable equipment, tools and parts . . . prevents breakdowns that slow down your overall operation. With shortages looming . . it's good sense to "face", it — and make it last! For a complete survey of your equipment and alloy recommendations, contact your nearest Airco office!



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DIVISIONS OF AIR REDUCTION COMPANY, INCORPORATED

at the frontiers of progress you'll find





WHEEL DRESSING TOOL-The face on almost every grinding wheel is flat and square to its axis. Special types, however, have faces that are curved or sloped off at an angle. With any of these, the dressing tool above can guarantee precision facing and truing of grinding wheels far exceeding hand dressing. The unit can be adapted to most pedestal and other grinders without disturbing tool rest setting. A 1/4- or 1/2-carat select diamond furnished can dress hard grinding wheels from 8-in. dia and 1-in. face (with a corresponding increase in diameter for softer wheels) down to correspondingly smaller diameters up to 21/4 in. in width. The knob controls traverse and the set screw limits infeed.— Monarch Machine Shop, Inc., Madison, Wis.

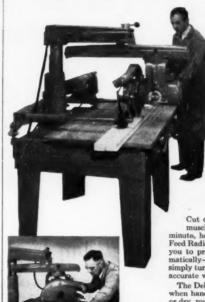
ENGINE - GENERATOR SET - A contractor's model of engine-generator set, the Model 4500, has been designed by the Wincharger Corp. for full output at 115 v, 60 cycles, ac. It has motor starting capacity of 4,500 w-sufficient to start and run motors up to 11/2 hp. The unit has 3,000-w intermittent rating; 2,500-w continuous rating. It operates portable tools such as chain saws, masonry saws, vibrators and lights. Available with either the standard tubular cradle base or portable base attachment (consisting of a single handle and semi-pneumatic, rubbertired wheels), the unit is designed for use with either a Briggs & Stratton No. 23 or Wisconsin AEN 4-cycle engine. The universal mounting base permits sale of the unit with or without engine.-Wincharger Corp., E. 7th and Division Sts., Sioux City 2, Iowa.

CRUSHING PLANT - Universal Engineering announces an addition to its line of crushing plants. Designed for 100% crushing, this plant features an 18x30-in. roller-bearing jaw crusher, an 18x31-in. hammer mill, and a 4x10-ft three-deck gyrating screen with ball tray. Special by-passes are built in to give product control, making it possible to produce aglime, road rock, chips or any simultaneous combination of the three products. The primary jaw crusher, apron feeder with by-pass, operator's platform, and structural

3

supports are mounted as a separate unit, on skids, which is bolted to the main frame. It can be removed easily to cut weight when traveling. Other features include side drive through a universal joint connection from truck-mounted power. Feed is direct from shovel or dump trucks from a ramp setup. With the addition of this new size, the Universal 293QH Limerock plants are now available in balanced combinations with 18x24-, 18x30- and 20x36-in. jaw crushers; 18x31- and 26x36-in. hammer mills, and 4x10- and 4x12ft screens.—Universal Engineering Corp., 625 C Avenue N.W., Cedar Rapids, Iowa.

FIBERGLAS SAFETY HAT-Said to have a lower crown than any other safety hat or cap, a new type has an air space between the hammock and crown that is 1/4 in. in excess of the 11/4 in, required by most safety codes. This permits freer circulation of air with more wearer comfort. The Hard Boiled Cap, as it is called, is made of Fiberglas in only one size, but headbands are quickly adjustable to sizes from 6% to 7%. The brim is shaped to form a rain-trough, and the crown is grooved along the top to hold a lamp wire in place. On tests the new hat exceeds safety requirements.— Safety First Supply Co., 425 Magee St., Pittsburgh 19, Pa.





the Delta automatic power feed achment, you reduce labor costs and adle material faster with resultant

Your Output 7 to 10 Times

Step Up

DELTA 16" POWER FEED RADIAL SAW

Cut out the "time out" of tiring, costly muscle power-rip up to 100 feet per minute, hour after hour, with a Delta Po Feed Radial Saw. Variable speed selector allows you to pre-set the desired rate of feed automatically-from 20 f.p.m. to 100 f.p.m .- by simply turning a dial. Smooth, even feed mean accurate work-increased profits.

The Delta Power Feed gives positive control when handling any lumber—soft or hard, we or dry, rough or finished, short or long. What's more, it safeguards your motor as blades get dull.

2 machines in 1-with the power feed attachment, the Delta is a real production machine; manually operated, it is the most versatile radial saw on the market-rips, angle rips, ploughs, rabbets, shapes, sands, routs...
uses have been listed in excess of 125 known operations.

There's a Delta Power Tool for Your Job-

LEE DELTA POWER TOOL DIVISION Rockwell MANUFACTURING

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Address

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ACCESSORIES

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NEW! light, compact, D-C field

ENGINE-DRIVEN

WELDER

with A-C power take-off



FIELD MAINTENANCE



FARM AUXILIARY POWER



PIPELINE CONSTRUCTION

A UNIT WITH MANY APPLICATIONS!

The new Westinghouse Engine-Driven Welder was developed for construction and field-maintenance operations. It provides 200 amperes of d-c current for welding. It also provides 3,000-watt, 110-volt, a-c current for stand-by power. By simply plugging into convenient receptacles on the a-c power panel, the operator may obtain power for drills, grinders, pumps, lights and other electrical equipment.

The standard unit is skid mounted for truck transport or may be mounted on a high-speed, pneumatic-tired trailer. Ready for field service, the unit weighs only 1,150 pounds and measures 39½" high by 62%" long in the stationary model.

The standard model has hand-crank start. Battery start is also available.

A large toolbox for storing cables, helmets, electrodes, tools and other accessories is also included if desired.

FOR MORE INFORMATION

Writetothe Westinghouse Electric Corporation, Welding Division, P. O. Box 868, Pittsburgh 30, Pa., or contact your nearest Westinghouse representative. Ask for Welding Booklet B-5455.

-21611

welder PLUS stand-by power!



CONVENIENT A-C

3 kw stand-by power can be obtained without using a bulky, auxiliary rotating machine. The operator simply plugs into one of the convenient 110-volt, a-c receptacles. This stand-by power is extremely beneficial when ordinary sources of power are not available.

2 IMPROVED GENERATOR

Closely coupled to the driving engine, this new improved generator makes it easier to strike and maintain a steady welding arc. No exciter is required. Welding current ranges from 40 amperes at 20-load volts to 250 amperes at 40-load volts.

3 EFFICIENT,

The new welder is equipped with a performance-proved,4-cylinder,liquid cooled, Ford industrial engine. It is rated 30 maximum and 25 continuous horsepower at 1,800 rpm. The engine is equipped with oil filter and oilbath air cleaner.





- For joining grader, trencher, ditcher and other earth moving conveyor belts.
- For belts 3/8" to 1/2" thick.
- A FLEXCO fastener that is HINGED. Has removable hinge pin.
- Troughs naturally, operates through take-up pulleys.
- Strong, durable . . . pull or tension is distributed uniformly across joint.

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Riggers PLAY IT SAFE on "high wire" jobs!



... that's why they demand GENUINE



Drop-forged, hot-dip galvanized wire rope fasteners SIZES FOR 16" TO 3" WIRE ROPE DISTRIBUTORS EVERYWHERE

AMERICAN HOIST & DERRICK CO. ST. PAUL I, MINNESOYA



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Make Big Savings You Don't Have to Buy New Forms for Every Job

SPEED FORMS can be set up, stripped, cleaned, moved and reused in far less time than wood. Lightweight, easy to handle. No heavy bracing needed. No gadgets or special fastenings—Units go together with wedge clips.

Made of Steel—Good for reuse again and again on job after job indefinitely without repair. Reduce material costs way below wood—Many records of 400-500 and more uses.



IRVINGTON FORM AND TANK CORP. 20 VESEY ST., NEW YORK 7, N. Y.

NEW EQUIPMENT BRIEFS

By utilizing built-in permanent magnets, Magne-Grip soft jaws for vises are snapped into position quickly and easily, eliminating clumsy, awkward devices to attach and hold vise jaws in place. They hold securely and can be removed by simply lifting them off. Manufactured by Magne-Grip Tool Co., 4900 W. Madison St., Chicago 44, Ill., they are made of an alloy that won't mar, scratch or gouge delicate finishes or highly polished metals.

An emergency stand-by generating plant, is available from Universal Motor Co., 494 Universal Dr., Oshkosh, Wis. This new electric plant has a 10-kw capacity, is available with electric or automatic starting, and can be furnished for single- or threephase service, at either standard or special voltages.

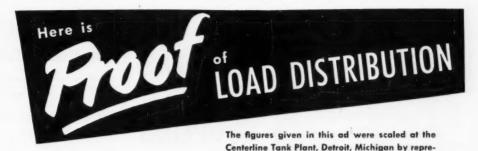
Originally designed for military use, the high capacity BOE 600S Clayton Kerrick Steam Cleaner is now made available in a civilian model. Capable of discharging up to 540 gph of pressure detergent spray or hot or cold pressure rinse, it is available from Clayton Mfg. Co., El Monte, Calif.

Two new electric hand drills are being introduced by the Porter-Cable Machine Co., of Syracuse, N. Y. One, Model 107, is a general-duty type with ¼-in. chuck; the other, Model 109 has ½-in. capacity for higher resistance work.

Underwriters' Laboratories, Inc., has approved the MSA Explosimeter, Model 2, a portable instrument developed by Mine Safety Appliances Co., Pittsburgh 8, Pa., for use in detecting hazardous gas or vaporair atmospheres. It also approves a special filter cartridge, incorporating a chemical re-agent, used with the instrument when sampling leaded gasoline vapor. Unit is powered by flashlight batteries.

A new line of oil hydraulic vane motors is announced by Vickers, Inc., 1400 Oakman Blvd., Detroit 32, Mich. An exclusive rocking beam construction keeps all vanes in intimate contact with the cam ring at all times, yet is not subject to the fatigue failure difficulties of spring-type vane actuators. They are now available for 50-7: 6.5- and 26-hp output.

A new 200-amp, engine-driven de are welder with a 60% duty cycle has been announced by the Welding Dept. of General Electric Co., Schenectady 5, N. Y. Designated as Type WD-42AGW, the new welder has a current range of 40 to 250 amp, and can be used with a variety of electrode sizes for repair, maintenance and construction work.



EMPTY VEHICLE 41,340 LBS.

WEIGHT OF LOAD 93,149 LBS.

LOADED VEHICLE 134,489 LBS.



sentatives of the Weightmasters Division of the

Michigan State Highway Department.



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AXLE	WEIGHT-	IRS.	u

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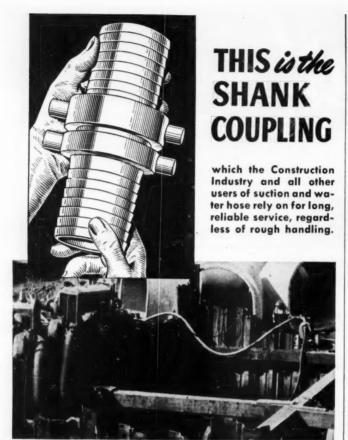


AXLE SPACING		6 in. 4 ft.				06 6t		ST TO LAST 3 ft. 7 in.
TOTAL TIRE WIDTH	20	40	40	40	44	44	44	
NO. TIRES	2	4	4	4	4	4	4	26
TIRE SIZE	10:00	10:00	10:00	10:00	11:00	11:00	11:00	
LOADED VEHICLE	10040	20760	20480	20190	20290	21359	21370	134,489
WEIGHT OF LOAD	19% 1820	63% 13100	64% 13040	76% 15270	78% 15870	80% 16909	80% 17140	70% 93,14
EMPTY VEHICLE	81% 8220	37% 7660	36% 7440	24% 4920	22% 4420	20% 4450	20% 4230	30% 41,34



THE TALBERT CONSTRUCTION EQUIPMENT CO., of Lyons, Illinois manufactures a complete line of low-bed trailers and dump semi-trailers

THE TALBERT-WAY IS THE EASY WAY



"KING" Shank Coupling

A brute for punishment, yet thoroughly refined in every detail of manufacture... absolute uniformity in quality, dimensions and threading... well defined, smoothly finished corrugations. Made in light and heavy patterns, in all-malleable iron, plain or plated; all-brass; and plain or plated malleable iron shanks with brass swizel nut. Size range from 1" to 8", inclusive.

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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

4-YARD SHOVELS—A 4-color, 8-p catalog describes Model 75A and 75B shovels and the 75BT truck crane. It describes construction and operational features such as the fluid coupling, right-angle gear drive, power-actuated hoist clutches and heavy-duty conical rollers which eliminate pin strain.—Gar Wood Industries, Inc., Findlay Div., Findlay, Ohio

ELECTRICAL FITTINGS—This 12-pager describes the manufacturer's complete line of solderless wire connectors, cable and conduit fittings and wiring devices. Several illustrations depict "pres-SURE connectors" for solderless wire splicing and terminating, along with specifications, dimensional data, application instructions and ordering information.—Buchanan Electrical Products Corp., Hillside, N. J.

PROTECTING MASONRY STRUC-TURES-The theme of a new 20-p booklet on Dum-Dum Masonoc, a heavy self-sealing protective coating, is the one best answer for protecting and restoring masonry structures. Described as not a paint but a heavy coating which can be applied many times thicker than paint and which has a term of protection many times that of paint, the material is said to have sufficient give to allow for expansion and contraction of material. Large illustrations show restoration and protection of 19 different types of masonry structures against attacks of wind, weather, fumes and heat.-Arco Co, 7301 Bessemer Ave., Cleveland 27, Ohio

ATTACHMENTS FOR "CAT" DIE-SELS-A 32-p booklet, "Attachments for Your Caterpillar Diesel Engine." has been published especially for anyone considering or now owning an engine installation. It contains the most complete selection of attachments ever presented by Caterpillar in booklet form. Accessories are pictured and described to show just where they are used and what they do. The booklet (Form 30338) is fully indexed, starts the reader at the engine base and concludes with a discussion of exhaust devices. In between are many other attachments for Caterpillar's 12 sizes of industrial, electric-set and marine diesel engines. Booklet is available from any Caterpillar dealer or from Caterpillar Tractor Co., Peoria 8, Ill.

BLACKHAWK IDEA BOOK - A most interesting booklet is the 64pager titled "1001 Valuable Shortcuts with Hydraulic Tools and Hand Tools." It is slanted toward the industrial, construction, electrical, mining, marine, aviation, oil and other industries. Various chapters are headed Ideas for Production, Ideas for Maintenance, Ideas for Testing, Ideas for Rescue Work, Ideas with Wrenches. Illustrations show a variety of applications from housemoving to bridge-lifting; from deflecting engine frames to prestressing concrete bridge slabs; from checking load tests on cranes to equalizing tension on steam fittings. Several pages list every type of Porto-Power attachment and electrical set. There is another section entitled "How to Select the Right Jack."-Blackhawk Mfg. Co., Milwaukee 1, Wis.

ARC WELDING ELECTRODES—A 49-p, pocket-sized booklet describing the application, chemical analysis and mechanical properties of General Electric's welding electrodes has been announced as available from G-E welding distributors. Designated GED-1634, the booklet also includes an electrode trouble-shooting chart, another which specifies the number of electrodes per lb, and an explanation of the significance of the AWS nomenclature.—General Electric Co., Schenectady 5, N. Y.

AMMONIA REFRIGERATION COM-PRESSORS-Specifications, pictures and descriptions of the following units are included in Bulletin C-1100-B38: Self-contained refrigeration units for ammonia; single-acting ammonia boosting compressors; 4 and 6-cyl high-speed ammonia compressors; vertical, single-acting, 2-cyl ammonia refrigeration compressors; horizontal single-double boosting compressors; horizontal double-acting motor or steam-driven compressors; 60-460-ton Y ammonia compressors; gas engine refrigeration compressors.-Worthington Harrison, N. J.

TELSMITH EQUIPMENT - A 36-p general catalog-No. 266R-describes Telsmith equipment for mines, quarries, gravel pits. It illustrates and describes the complete line from crushers to bin gates. The first section contains information on Telsmith primary and secondary crushers; gyratory breakers; jaw, Gyrasphere, intercone and roll crushers; followed by apron and plate feeders; scalping, sizing and washing screens. The second section has information on belt and chain elevators, conveyors, bin gates and Telsmith portable crushing plants. The highly illustrated catalog gives comprehensive tables on sizes, capacities, weights and power requirements.— Smith Engineering Works, 532 E. Capitol Dr., Milwaukee 12, Wis.



Faster, lighter, easier handled, the new Ramset Jobmaster sets a record pace for steel and concrete fastenings. Properly trained workmen quickly become skilled operators because of smooth, simple, natural motions of loading, placing, firing. Positive controls bring improved accuracy and efficiency . . . and still lower fastening costs. Ask your dealer for demonstration of how Ramser's years of pioneering have made the new Jobmaster the proved-in-performance leader.

Ramset Fasteners, Inc.

Ramset Division, Olin Industries, Inc.
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(Above)
Model D31/2S Maximum Capacity 31/2 cu. ft. 16 gauge tray, all welded, no rivets, double lapped at corners. Steel channel legs. V-shaped front braces and brace specific

(Right)
Model CSW Maximum Capacity 5 cu. ft. 16 gauge
tray, all welded, no rivets,
double lapped at corners.
Heavy-duty malleable wheel
guard.

There's a Sterling Barrow for every type of hauling lob, whether it's dry, bulky materials like sawdust or heavy industrial loads like castings or steel parts. Also special barrows for brick, tile, concrete block and similar materials. All barrows are scientifically designed, well balanced and sturdily constructed for a long service life. Choice of wood handless or tubular steel frame, steel wheels or pneumatics. Write for new Sterling Wheelbarrow Catalog No. 61.



Sterling WHEELBARROW CO., Milwaukee 14, Wis.

Sterling
WHEELBA

Look for this Mark of STERLING Quality

FUNK Special POWER UNIT CLUTCHES and TAKE-OFFS

This right angle drive and heavyduty clutch unit is only one of many engineered and manufactured by FUNK. There are types and styles to fit almost any requirement for shaft speed and installation space. They are designed to fit any standard SAE flywheel housing or Ford Industrial Engine. Our engineers will be glad to work with you on any special power problem.



FUNK Products include:
Straight Power Take-Off Clutches
Gear Reduction Take-Offs
Right-Angle Take-Offs
Front End Take-Offs
Jack Shaft Extensions

Ford Tractor Conversion Kit, changes to 6 or V-8 engines, doubles the power at 1/3 the cost.

FUNK AIRCRAFT CO.

3303 Airport Drive

Coffeyville, Kansas

TORQUE CONVERTERS—A 4-p illustrated booklet (TC-639) presents information on the Torcon heavyduty automatic hydraulic torque converter. Designed to handle variable loads at variable speeds, the unique transmission combines a hydraulic torque converter and hydraulic coupling in a single unit and retains the advantages of both. It further explains that the hydraulic transmission can be optionally furnished with or without cut-off clutches.—Torcon Corp., Ashtabula, Ohio

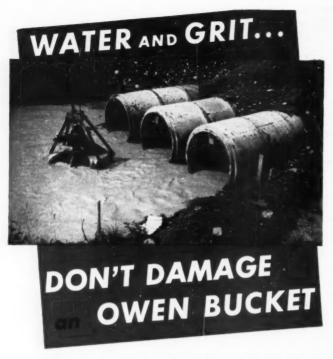
BITUMINOUS PAVER — A 12-p, fully illustrated bulletin on Pioneer's Model BP-6 bituminous paver explains operating details and includes complete specifications for the machine. Features claimed by the manufacturer are: Almost instant width adjustability from 9 to 12½ ft; oscillating compaction and finishing controlled with tiltable screens; automatic, positive matching to level of adjacent course, curb, gutter or other structure.—Pioneer Engineering Works, Inc., Minneapolis 13, Minn.

REVERSIBLE CLAMSHELL BUCKET TEETH - Of interest to owners and operators of clamshell buckets in the excavating and heavy construction field is a reversible and replaceable cutter announced by Blaw-Knox. The new unit replaces the old-type, one-piece tooth presently used. The tooth has a base which is permanently attached to the scoop, or lip, in the usual manner. A reversible and renewable tip which fits into a slot and wedges itself into the base is the newest idea. Bulletin 2399 fully describes this new accessory and is available from Bucket Dept., Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.

SAFWAY SHORES — Methods of using Safway shoring to support scaffolding, and particularly to ease close decking are discussed in a 4-p folder along with specifications of the product, advantages of its use, drawing showing installations and bracing systems. The shores are said to have advantage of one-man operation and require no nailing. They are adjustable to exact required heights from 6 ft to 15 ft 6 in.—Safway Steel Products, Inc., W. State St., at N. 63rd St., Milwaukee 13, Wis.

HOLLOW METAL DOORS — 16-p catalog of information on doors, frames and hardware is profusely illustrated with pictures of the types and sizes of door-frame-hardware units in the Fenestra line. The catalog gives installation instructions, descriptions, uses and complete specifications. Also included are accessories in the hardware and equipment line, such as hinges, push plates, door checks and head bolts.—Detroit Steel Products Co., 2250 E. Grand Blvd., Detroit 11, Mich.





With a less expertly designed bucket water would likely carry abrasive sand and grit into the bearings causing excessively rapid wear and deterioration.

Not so with an Owen.

Years ago Owen engineers learned the hazards of difficult underwater service.

And through experimentation and experience they designed bearings that retard these destructive forces.

For the protection of your buckets and in your own financial interest "buy an Owen" equipped with abrasion resisting, pressure-lubricated bearings.

Get the interesting Owen catalog.



HEAVY - DUTY DC RECTIFIER WELDER—"A New Concept in DC Welding" is the title of a 6-p folder describing A. O. Smith Corp.'s heavyduty de rectifier welder. Some of the features mentioned are lower power cost, less maintenance expense, minimum floor space, smoother are action fully weatherproofed case and effortless current control. Cutaway views show the mechanism of the machines, which are available in 200-, 300- and 400-amp ratings.—A. O. Smith Corp., Welding Products Div., P. O. Box 584, Milwaukee 1, Wis.

P&H ¾.YD SHOVEL—A large picture book of its Model 255-A power shovel has just been published by Harnischfeger Corp. The 24-p, two-color bulletin makes liberal use of big detailed photos to show design features and various components of this ¾-yd machine which can be converted for seven different services. Labeled Bulletin X71-4, it lists many improvements made in the Model 255-A over the last several years and is available from Harnischfeger Corp. 4400 W. National Ave., Milwaukee 46, Wis.

STEELOX BUILDING—This 24-p highly illustrated booklet (SX-2051) describes how the company's interlocking panels are erected, with detailed drawings to aid the reader. The booklet shows how two standard types—shed roof and gable roof—meet practically every need for warehouses, shops, offices and similar structures. Sections deal with accessories, insulation, painting, interior finishing. Copies may be obtained from Armco Drainage & Metal Products, Inc., Middletown, Ohio

CRAWLER TRACTORS, WHEEL TRACTORS — "Helping Hands for Your Material Handling" is the title of a 16-p booklet by the Oliver Corp. It describes its crawler tractors, wheel tractors and the complete line of matched allied equipment. Crawler tractors described in this booklet include Models A, B, D, FDE, and OC-3. Wheel tractors include Models 6, 77 and 38.—The Oliver Corp., 19300 Euclid Aye., Cleveland 17, Ohio





Constant Pounding
Causes this—

How THORITE

Patching Mortar, repaired and added strength to loading platform in 30 minutes

A QUICK PATCH for concrete walls and floors

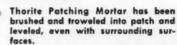
Smaller areas, around large one, is in complete state of disintegration.



BEFORE

Largest area is 2' long and 18" wide, 11/2" deep.





Floor area was back in use, for heavy warehouse trucks, 30 minutes after beginning work.

Get our 20-page brochure pictorially describing in detail "HOW TO DO IT". It's yours for the asking!



Standard Dry Wall Products NEW EAGLE, PENNSYLVANIA

Phone Monongahela 67



New Booklet Gives Data on High-Strength Bolting

We have a new 8-page booklet, "High-Strength Bolting for Structural Joints." It's chock-full of data on structural bolting, and includes the information that needs to be supplied in ordering high-strength bolts. For your copy, write to us at Bethlehem, Pa.



Steelwork can be erected quickly, and quietly as well, when Bethlehem High-Strength Steel Bolts are used to join the structural members.

Bethlehem High-Strength Bolts save time because they are so easy to handle. They provide a secure joint, and are used in place of field-driven rivets. No change in shop work is necessary, as the bolts do not require a driving fit.

In assembling Bethlehem High-Strength Bolts, a hardened washer is placed under both the head and nut. This permits the development of the high torque required, without scoring the connected material. The hexagonal nuts are driven up on the bolts so tightly that there is no possibility of slip at working loads.

Bethlehem High-Strength Bolts are made from carbon steel, and are produced at our fastener plant at Lebanon, Pa. They are heat-treated by quenching and tempering to conform to the requirements of ASTM Specification A-325. Write for full information.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

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Bethlehem supplies every type of Fastener

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HOW MALSBARY STEAM CLEANERS SAVE DOWNTIME IN WINTER



When King & Brenaman's tractor-scraper rigs stood overnight without cleaning in Ontario's winter weather, mud froze, caused cable breakage and costly downtime. Pick and shovel cleaning proved im-practical. Then two MALSBARY 250 heavy-duty cleaners whipped the problem by completely steam cleaning the entire fleet of 47 big rigs each night in approximately 7 hours.

Another MALSBARY Model 250 in Leduc, Alberta, keeps hydrants, standpipes and sewer lines thawed out during subzero weather.

Exclusive Pumping System

Winter or summer, MALSBARY exclusive patented pumping system delivers 2 to 4 times more pressure than steam vapor cleaners . . . at temperatures to 325°F . . . lets you quickly blast abrasive, corrosive mud, grease and stubborn road oils from construction rigs; or de-gas, heat and clean asphalt tanks; do many jobs other cleaners can't touch. See for yourself-fill in coupon NOW for on-job demonstration.

3 heavy-duty models-250, 300 and 500. Oil or gas fired; gas engine or electric drive; stationary, portable or trailer mount. All develop hot solution in 2 to 3 minutes. Gadget free, dependable.





~	Oakland 3,	Calif.
Maisbary Mfg. Co., Room C12, 845-92nd I AM INTERESTED IN— On-the-job demonstration. Free booklets on MALSBARY Cleaners. 'How To Make Efficient Use of Steam C		MAIL TODAY!
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Continental Motors Corporation

MUSKEGON, MICHIGAN

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STOP that WATER

with FORMULA NO. 640, a clear liquid which pene trates 1º plus in concrete, brick, stucce, plaster ete Seals nut water, dirt. Holds 20° brad. Use outside and in Preserves all absorbent materials. Sold 14 pears, Quink economical, sure. 83° in 55°s. Free sample. See Sweet's HAYNES PRODUCTS CO., OMAHA 3, NEBR.

WITH SMITH-MOBILES!

Have You Checked the Highway Weight Limits

Sooner or later you'll have to face the problem of staying under the highway weight limits of your state. Naturally, you want to take that into consideration when you select your truckmixers. Smith-Mobiles have proper weight distribution that enables you to take full advantage of the allowable weight, either gross vehicle weight or weights on individual axles. These modern truck mixers permit you to carry the greatest possible payload . . . even to the fraction of a yard. And the beauty of it is, gross weight is reduced without in any way compromising with high-quality design, rugged construction and mixer performance. You get the same sturdy Smith-Mobiles...each one with an NRMCA rating plate. Write for new bulletin,

Ways to Get BIGGER

SMITH-MOBILE with Rear Engine Drive.

Engine moved to rear of mixer, cutting almost 20" off the overall length. Enables you to move your mixer forward, shifting center of gravity and putting a bigger share of the load on the front axle. Gives you better weight distribution without using cab-over or cab-ahead type of trucks. Or, you can use a shorter wheel-base truck and get greater maneuverability. Both engine and transmission are completely accessible. Three Loadlimit sizes, 41/2, 51/2 and 61/2 cubic yards. Higher ratings for agitators.

2 SMITH-MOBILE with Iruck Engine
Mixer Engine eliminated. Weighs about 1300 pounds less than mixer
Mixer Engine eliminated. Weighs about 1300 pounds less than mixer closer to
mixe separate engine. Enables you to mount mixer closer to equipped with separate engine. Enables you to mount mixer closer to cab, moving considerable weight from rear to front axle. Utilizes the same two speed transmission as rear engine drive model. One engine instead of two means less fuel consumption and less engine maintenance. Does a good job, even on curb and gutter work. Available for both Loadlimit and Closed-End Models in 4½, 5½ and 6½ yard sizes with higher ratings for agitators.

SMITH-MOBILE Trailer Mixer.

Enables you to carry from 8 to 9 yard payloads and still be within highway loadlimits. Most state highway laws allow you to carry about three yards more on a semi-trailer than on a tandem axle. Use of a suitable length trailer allows freedom in mounting mixer to attain proper load distribution. Makes unit easy to maneuver. Also you gain the advantage of having the tractor available for other jobs. Furnished in Loadlimit and Closed-End models in one size only, 61/2 yard mixer, 85/8 yard agitator.









THE T. L. SMITH COMPANY

2851 NORTH 32ND STREET . MILWAUKEE 45, WISCONSIN, U. S. A.

ONCRETE MIXERS

For BIGGER and BETTER Concrete Mixers and Truck Mixers . . . LOOK TO SMITH



HEATING KETTLES FOR ASPHALT AND TAR

Fire Proof — Oil Burning Hand and Motor Driven Spray

Other Products

CONCRETE VIBRATORS

Gasoline Engine and Electric Motor Driven Models

FOR Industrial Tractors

AGGREGATE DRYERS

ASPHALT PLANTS

Portable — Stationary Write for Circulars

White Mig. Co.

ELKHART 6

INDIANA

HOW TO MAKE CONCRETE VIBRATOR DO THE WORK OF

A prominent user of Vibro-Plus Internal Vibrators says one Vibro-Plus does the job of two ordinary vibrators. He says his concrete tests very high—and costs substantially less. Vibro-Plus will save money for you, too—cutting your concrete time and labor costs up to 60%. There are gasoline, electric and pneumatic models

(with shafts and heads all interchangeable). All three deliver vibrating frequencies of from 11,000 to 15,000 per minute...yet operating and maintenance costs are low. Write today for bulletins and nearest

distributor.



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SEARCHLIGHT SECTION (Classified Advertising)

H. E. Hilty, Mgr.

EMPLOYMENT
Positions Vacant 160
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EDUCATIONAL
Tutoring 160

EQUIPMENT
(Used or Surplus New)
For Rent
For Sale
Piling
Pipe
Rail

CONSTRUCTION

E. E. WEYENETH
Advertising Sales Manager
Assistant Manager

J. G. JOHNSON

Soles Representatives: N. T. Buchanan, 330 W. 42nd St., New York; F. G. Hudson, Knox Bourne and G. A. Mack, 520 N. Michigan Ave, Chicago; R. E. Dorland, 68 Post Street, San Francisco; W. C. Bradford, 1510 Hanna Bldg., Cieveland; W. E. Donnell, Continental Bldg., St. Louis; H. L. Keeler, 1111 Wilshire Bivd., Los Angeles; R. C. Maultshy, 1321 Rhodes-Havery Bldg., Alfonto: James Cash, First Nethonal Bank Bldg., Dallas. Other Solas Offices. Other 3018 Offices. Bldg., Destart; 338 Others Bldg., Destart; 339 Others Bldg., Destart; 350 Perk Square Bldg., Bastan 16; 95 Farringdon St., London, E.C. 4.

SEARCHLIGHT SECTION

(Clossified Advertising)

EMPLOYMENT BUSINESS

EQUIPMENT USED OR RESALE

OPPORTUNITIES

UNDISPLAYED RATE

\$1.50 a line, minimum 3 lines. To figure advance payment count 5 average words as a line. Positions Wanted and individual Selling Oppor tunity undisplayed advertising rate is one-half o above rate, payable in advance.

The advertising rate is \$13.20 per inch for all advertising papearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured %3" vertically on the contract rates quoted on request.

REPLIES (Box No.): Address to office nearest you NEW YORK: 330 W. 42 St. (36) CHICAGO: 520 N. Michigan Ave. (11) SAN FRANCISCO: 68 Post St. (4)

POSITIONS WANTED

SERVICE ENGINEER for heavy duty off highway trucks, desires position overseas as mechanical supt, with responsibility of fact operation and maintenance. Experience in selection and training of workers. Married, age 27. PW-5421, Construction Methods & Equipment.

TRACTOR SHOVEL MEN

Caterpillar Tractor Co., Peoria, Illinois, has responsible positions open for field representatives to live and serve in continental United States. Knowledge of time study and techniques important. Experience with tractor-mounted shovels and an engineering background helpful. Send full particulars of experience and education to Mr. R. D. Evans, Sales Development Division.

CATERPILLAR TRACTOR CO.
Peoria 8, Illinois



Superintendents and Project Managers Training Course.

All instruction by mail. Send today for sample lesson and complete details.

GEO. E. DEATHERAGE & SON

E. Presten St. Baltimore 2, Maryland



All lifts are easier with a

CRANE MOBILE

for instance...

LONG BOOM for reach—

SHORT BOOM

for heavy loads—

Whether your next contract calls for handling heavy lifts or long reach, the sturdy stability and the flexible performance of the CraneMobile makes all lifts easier. The CraneMobile is available in a number of sizes...crane capacities up to 25 tons...a selection of BAY CITY built carriers to meet job requirements. Here is a rubber-tire-mounted crane that will speed to scattered jobs. A crane packed with refinements and operating advantages to give you bigger value.

Let's consider just a few of the advantages . . .

- A collapsible high-gantry which permits lifting maximum recommended boom lengths from horizontal without outside assistance.
- An accurate, fast, independent boom hoist which raises or lowers boom or boom and load by power only.
- A power load lowering device that may be quickly engaged or disengaged to handle lowering of heavy loads smoothly and with precision.

But that's only part of the story. Why not get complete information from your nearest BAY CITY dealer.

BAY CITY SHOVELS, INC., Bay City, Michigan

WRITE FOR THIS BOOKLET

Get this handy pocket-sized booklet of facts and features showing why "all lifts are easier with a CraneMobile". It's loaded with information, it's neatly illustrated and it's yours for the asking ... Write us.







BAY CITY



SHOVELS . CRANES . HOES . DRAGLINES . CLAMSHELLS

Methods Memo . . .

DOLLARS FLY OUT THE WIN-DOW pretty fast when a vital piece of equipment fails in the middle of an important operation. We saw that happen the other day when two winch trucks and a truck crane coordinated their efforts in the moving of a 200-ton headframe (see story page 88). About halfway through the job, the engine in one of the winch trucks quit—and resisted all efforts to get it going again.

The job was delayed for one hour while the stalled winch truck was towed away, a heavy-duty wrecker truck with winch brought in from a local garage, and the rigging changed to accommodate the new hookup. In the meantime, about 20 riggers, helpers and equipment operators had to mark time until the move got under way again.



NEW AWARD, the National Safety Council's recognition "for exceptional service to safety," is being received in the photo above on behalf of the Associated General Contractors of America by H. B. Alexander (right) of Harrisburg, Pa., chairman of the AGC accident prevention committee. Making the presentation is Ned H. Dearborn, president of the Safety Council.

The award henceforth will be issued annually to give recognition to associations for the general excellence of their safety programs and for their contribution to reduction of occupational injuries. The Portland Cement Association received an identical award.

BIG MACHINES ARE DAMAG-ING when permitted to get out of hand. This was proved again last month when Herbert L. Howard lost control of the Tournapull he was operating in suburban Detroit, fell off and was crushed under a rear wheel. The driverless scraper kept on going and finally came to a halt 500 ft away in the living room of a house. Fortunately, the occupants were not at home, but a policeman, fireman and a construction worker were injured seriously when gas escaping from a broken pipeline exploded, setting the house on fire.

HIGH-SPEED HOUSE MOVING was demonstrated recently by the Navy at the Naval Supply Depot, Spokane, Wash. A 34x30-ft plumbing shop had to be moved to a new site. The job was done by spotting three 15,000-lb Hyster lift trucks with finger lifts at one end, two similar units at the opposite end, lifting in unison and driving away as a team, cradling the building between them. Not a single window pame was broken.

INCIDENTAL INTELLIGENCE gathered by Hank Perez on his trip to Alaska (story, p. 60):

Permafrost is a remnant of the Ice Age. Preserved saber-toothed tigers and mammoths, fully fleshed and complete with tusks and fur, have been excavated from it during placer operations. While permafrost often goes hundreds of feet deep, once thawed it will not re-freeze below normal frost penetration—some 8 ft in the Fairbanks area.

Sitting on parachute buckles in a bucket seat in the un-pressurized cabin of an unheated plane at 13,000 ft without oxygen is not much fun—particularly when you're losing at gin rummy to the chap alongside.

Alaskans say "In the Arctic, it takes twice as many men twice as long to do half as much half as well." But that applies only to the north country in the dead of winter, when temperatures of 50 and 60 below are not uncommon.

Alaska is an air-minded territory. Anchorage, for example, has more civilian planes per capita than any other U. S. city. (It also may have more bars.)

Since the Corps of Engineers established its lump-sum bid practice six years ago, only one contract has had to be terminated. And that one was for only \$25,000.

We always thought that Fort Richardson at Anchorage, the village of Richardson in the interior, and the Richardson Highway from Fairbanks to Valdez were named for our Editor Harold W. (Rich) Richardson. Now we find that Gen. Wilds P. Richardson, first president of the Alaska Road Commission (1905), is the man honored.



On the Cover ...

On Christmas morn construction operations move indoors, and the small fry take over in the mystic glow of the lighted tree. And, of course, pajamas and hard hats are appropriate costumes for the early morning shift as these young construction stiffs line up their fleet of authentic equipment models to get the job rolling. While this scene will be repeated in hundreds of construction homes Christmas Day, of course we couldn't wait until then to photograph it for you. No, this picture had to be made a long time in advance. in July, to be exact, at Peoria, Ill., with the temperature topping 100.

Snuggled safely under their Bullard hard hats are Tom (left) and Dave McCluskey, young construction hopefuls in the Roy McCluskey family. Papa Roy, vice-president and general sales manager for R. G. LeTourneau, Inc., beams down on the scene from the doorway. Ever try to find a perfect Christmas tree in July? Roy managed to locate a scrawny tree, took it down to the LeTourneau factory, where the shop men drilled holes in the trunk and grafted branches to round the tree in balanced loveliness. We hope that this striking and unusual cover compensates the McCluskeys for all the trouble they encountered in staging the scene for us during the July heat wave.

WHAT THIS COUNTRY NEEDS more of, and desperately at that, are the traffic-free roads and the ever-ready parking places always found in the new car commercials on TV!



POZZOLITH MIXED CONCRETE In World's Largest Underground Garage

To a long list of outstanding structures built with Pozzolith Ready-Mixed Concrete has been added this 2000-car underground garage.

Use of Pozzolith Concrete assured designed strength . . . also resulted in quicker re-use of slab shoring material - reducing costs and speeding up work; good concrete surface - holding down finishing cost of slabs.

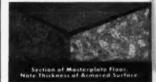
Pozzolith's cement-dispersing, water-reducing and air-entraining action (making available the optimum amount of air) produces these further benefits:

- 1. Reduced Shrinkage for less cracking.
- 2. Lower Permeability for less "waterproofing". . . later.
- 3. Increased bond-to-steel for better construction.
- 4. Greater Durability for lower maintenance costs.

Full information and Pozzolith booklet on request.

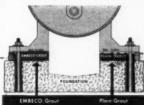
Over 600 Leading Ready-Mixed Plants Are Producing Pozzolith Ready-Mixed Concrete

Masterplate produces "iron-clad" concrete floors with 4-6 times longer life; also sparks resistant and static-disseminating. Noncolored and 11 colors. For new floors and resurfacing.



EMBECO . . .

Embeco (1) produces flowable, non-shrink, ductile grout which . . . (2) gives full, level, lasting bedplate contact . . . (3) helps avoid costly shutdowns



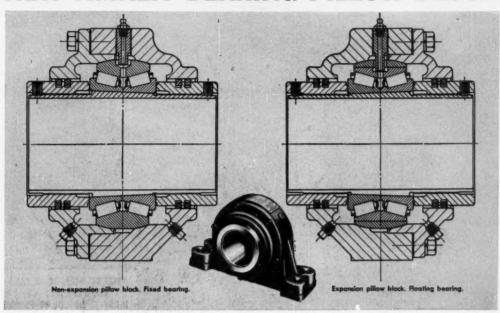
CLEVELAND 3, OHIO



Subsidiary of American-Marietta Company

TORONTO, ONTARIO

NEW TIMKEN® BEARING PILLOW BLOCK



First application of new tapered bore TIMKEN® bearing makes new Dodge-Timken pillow block more compact

IT takes up less space. It weighs less. Yet the new Dodge-Timken® All-Steel pillow block has tremendous load-carrying capacity.

It's the result of the combined achievements of the Dodge Manufacturing Corporation, Mishawaka, Indiana, and The Timken Roller Bearing Company and makes use of an entirely new Timken bearing. Never before has a self-aligning, non-adjustable tapered roller bearing with tapered bore been used in pillow blocks.

Being of all-steel construction, this new Dodge-Timken pillow block is more compact and fills a real need where space is a factor. It is available in both expansion and non-expansion designs. And it incorporates all the advantages of Timken tapered roller bearings.

Because of their tapered construction, Timken bearings take radial and thrust loads in any combination. Line contact between rollers and races gives Timken bearings load-carrying capacity to spare. Timken bearings are made of the finest steel

ever developed for tapered roller bearings-Timken fine alloy steel-and under normal conditions will last the life of the machinery with which the pillow blocks are used.

When you install new Dodge-Timken pillow blocks, you can expect dependable performance because the bearings are the best. No other bearing can give you all the advantages you get with Timken bearings. Specify them for all your other machinery, too. Look for the trade-mark "Timken" on every bearing. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

